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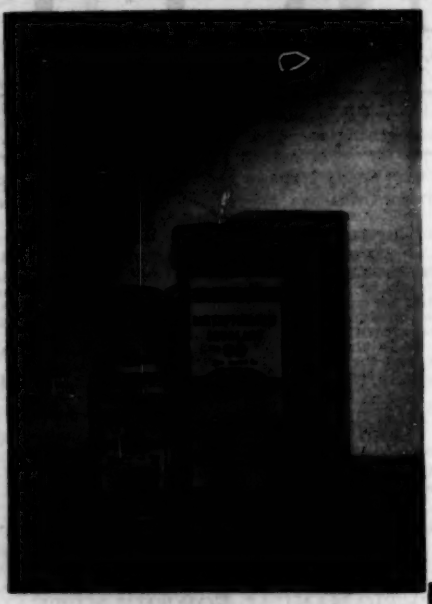

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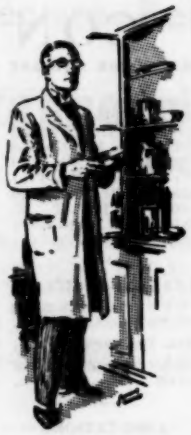

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THE TREATMENT OF NEPHRITIS*

BY ARTHUR ELLIS, M.D. Toronto, F.R.C.P. Lond.
DIRECTOR OF THE MEDICAL UNIT, THE LONDON HOSPITAL; PROFESSOR OF MEDICINE IN THE UNIVERSITY OF LONDON

IN recent years new ideas as to the nature and pathogenesis of nephritis have arisen. It will be well to review these new conceptions before discussing methods of treatment.

The Nature of Acute Diffuse Nephritis

The intimate connexion between nephritis and infection has long been realised, but only lately has the significance of the time-relationship between the causative infection and the onset of diffuse nephritis been understood. Scarlatinal nephritis, as is well known, appears characteristically between 19 and 24 days after the onset of scarlet fever. It is not so generally appreciated that in the great majority of other cases of acute nephritis (often ascribed to chill or exposure) the signs of renal damage appear between one and three weeks after another streptococcal infection—namely, acute tonsillitis. It is true that nephritis does occur during the height of an infection, when the patient is febrile, but it has recently been shown that such cases usually differ clinically and pathologically from classical acute nephritis, of which œdema and rise of blood pressure are typical features. Clinically, nephritis occurring during the early days of an infection is characterised by albuminuria and hæmaturia without œdema and without rise of blood pressure; its course is mild and short, a matter of days instead of weeks; it rarely, if ever, becomes chronic. Pathologically, in the few cases where microscopical examination of the kidneys has been possible, focal damage has been found affecting only a few glomeruli; there has been no general glomerular involvement as in acute diffuse nephritis. This focal nephritis is reminiscent of the focal embolic nephritis often seen in subacute infective endocarditis, and is ascribed to direct injury of the glomeruli by the causative organisms or their products, perhaps in the process of their excretion.

With the recognition of acute focal nephritis as a separate condition, the phenomenon of the latent period in acute diffuse nephritis becomes more striking. It would seem that acute diffuse nephritis is indeed a complication not of infection, but of convalescence from infection; it appears at a time when the patient is developing his immunity. For this reason acute diffuse nephritis is now widely suspected of being allergic in origin—that is, of being the manifestation of a hypersensitive state developed in the process of immunisation. This view is supported by the occurrence, with the onset of acute diffuse nephritis, of disorders suggesting diffuse capillary damage. The organism concerned seems to be usually the hæmolytic streptococcus, but other organisms may sometimes be responsible.

Three very different theories of the actual mechanism of the pathological process in acute diffuse nephritis are current. These may be designated, the "toxic" or "inflammatory" theory, the "ischæmic" theory which presumes a spasm of the afferent arterioles, and the theory of "capillaritis" which presumes a widespread capillary disorder.

The "toxic" theory.—This is the common older belief that the kidney lesion in nephritis is comparable to the inflammation due to bacterial damage in other organs in known infectious conditions. The inflammation is thought to be the direct result of bacterial toxins perhaps concentrated in the process of excretion by the kidney. The conception of nephritis as an allergic manifestation does not obtain among the exponents of this point of view.

The "ischæmic" theory.—The conception of the renal lesion in acute nephritis as one of acute ischæmia due to arteriolar spasm—spasm of the afferent arterioles of the glomeruli—is due to Volhard. The great contributions which Volhard [1] has made to our knowledge of nephritis have naturally resulted in wide acceptance of his theory. Volhard accepts the probable allergic nature of acute diffuse nephritis and considers the arteriolar spasm as perhaps an allergic manifestation. I do not feel that the evidence in favour of Volhard's theory of arteriolar spasm is convincing, though spasm may well play a part in some cases.

The theory of "capillaritis."—The exponents of this theory believe that the renal lesion in acute nephritis is merely one manifestation of a widespread capillary damage, a generalised "capillaritis." The kidney suffers severely because the glomerulus is essentially a capillary structure. As will be elaborated later, they consider the œdema, which appears within the first hours of onset, and the circulatory disturbances, manifest in severe cases, evidence of a generalised capillary disorder.

It is to this last theory that I personally adhere: The intimate relation of allergy and capillary disorder in man is well established. Lewis [2] has demonstrated the action of histamine on capillaries and arterioles and has indicated its resemblance to the reactions occurring in hypersensitive states. I conceive that acute diffuse nephritis may be due to the liberation, in the process of immunisation to hæmolytic streptococci, and possibly other organisms, of a substance having a similar toxic action on capillaries resulting in their alteration and in increased permeability of their walls. To the exponents of the capillary theory, and to the followers of Volhard, the endothelial proliferation and other cellular changes occurring in the tuft are essentially reparative. I should like to make clear, beyond all possibility of doubt, that this theory of the allergic nature of acute diffuse nephritis is merely a working hypothesis. It cannot, and must not, be regarded as an established fact.

The two last-mentioned theories of the nature of acute diffuse nephritis have this in common, that they direct attention away from the kidneys and towards the heart and circulation. This common outlook is responsible for similar ideas of treatment, and despite different views of pathogenesis my methods of treatment are based on those of Volhard. I am in complete agreement with Volhard as to the occurrence of cardiac dilatation and cardiac embarrassment in severe cases of acute diffuse nephritis, but I believe the explanation of this to lie in a generalised disorder of the circulation rather than in an arteriolar spasm.

Treatment of Acute Diffuse Nephritis

It is my belief that the necessity and advantages of treatment in acute nephritis are inadequately appreciated. Warmth and rest in bed are first essentials, and in focal nephritis are all that is required, but in acute diffuse nephritis more active measures are desirable. It is highly probable that one reason for the curious paradox, that a case with an acute onset has a good prognosis, one with insidious onset a bad one, is that in the insidious cases the patient often remains up and about during the acute stage of the disease. In all cases of acute diffuse nephritis it is my practice to give a preliminary "starvation" period. During this period all food and fluid except orange juice is forbidden and this is restricted to 1 pint in 24 hours. My routine is to

* A post-graduate lecture delivered at the London Hospital.

give orange juice in the following amounts: 6.30 A.M., 90 c.cm. (℥iii); 10 A.M., 90 c.cm.; 12 noon, 90 c.cm.; 3 P.M., 90 c.cm.; 6.30 P.M., 120 c.cm. (℥iv);; 8 P.M., 120 c.cm., of which the patient may leave as much as he desires for consumption through the night. Sugar may be added to sweeten if necessary but is rarely required. About sixteen oranges will provide the above quantities of juice. It is remarkable how little discomfort this restriction causes. Patients, even small children, can be so treated for periods of days without complaint. With such restriction, the blood pressure, if raised, usually rapidly falls, and œdema, if present, usually disappears. It is my practice to continue the restriction till the blood pressure is normal, or up to periods of ten to fourteen days if necessary. The diet is then gradually increased, milk, milk puddings, bread and butter, gravy, jellies, custards, jam, and vegetables being added. Should the blood pressure again rise, a further period of restriction may be instituted. If the progress is satisfactory, fish, chicken, rabbit are gradually added to the diet. Salt is not added to the food but salt-free cooking is not attempted. Daily records of the blood pressure are essential in the control of acute diffuse nephritis. It is to be emphasised that systolic pressures of even 130 mm. of mercury, in young patients at rest in bed, are of definite significance.

HEART FAILURE

In more severe cases with breathlessness, further measures are required. In such patients some degree of dilatation of the heart as demonstrated by outward displacement of the apex-beat is sometimes present. This cardiac dilatation and embarrassment is usually associated with definite but not conspicuous hypertension. The systolic blood pressure is commonly between 150 and 180 mm. Hg, only occasionally is it above 200 mm. Yet in such cases sudden acute heart failure may supervene and may rapidly prove fatal: the heart dilates; there is well-marked outward displacement of the apex-beat which becomes weak and diffuse; there is acute œdema of the lungs over which moist sounds are everywhere heard; the patient begins to cough, and coughs up frothy sputum which latterly often becomes blood-stained.

In all patients with breathlessness or in whom the apex-beat is displaced, complete rest is essential. These patients should be nursed most carefully and allowed to do nothing for themselves; the intake is rigidly restricted as described above. If the symptoms are at all severe, and immediately if signs of acute failure are present, a large venesection,† 600 c.cm. in an adult, should be performed. Strophanthin gr. 1/100 is then given intravenously, and the patient is given digitalis ℿ 15–30 four- to six-hourly according to the severity of the case. If the patient is restless, morphia gr. ¼–½ should be given. The resulting improvement is sometimes dramatic, and as a rule all evidence of heart failure soon disappears. It is to be emphasised that subsequent complete and permanent cure of the nephritis usually follows.

The occurrence of acute cardiac failure in acute nephritis has not been generally recognised in the past. The credit for its appreciation belongs to Volhard, who called attention to the condition and elaborated the appropriate treatment. Acute heart failure and hypertensive encephalopathy are probably the two most important complications of acute diffuse nephritis. These conditions may appear together and are both markedly amenable to treatment.

HYPERTENSIVE ENCEPHALOPATHY

Hypertensive encephalopathy is the term devised by Fishberg [3] for a condition, characterised by attacks with certain cerebral manifestations, which sometimes occurs in association with arterial hypertension in both the acute and the chronic stages of nephritis and in essential hypertension. Headache, vomiting, coma, convulsions, transient amblyopia or deafness, and other transient paralyses such as hemiplegias, monoplegias, or paralysis of cranial nerves are characteristic of this condition. There may also be mental disturbance. The attacks may come on quite suddenly and may be fatal. Occasionally there may be as many as 30, 40, or even 50 or more fits in 24 hours. The paralyses when they occur may disappear within a few hours or there may be only transient slight weakness or numbness of an extremity. The blindness is central in origin and usually disappears within 24 to 48 hours. The condition has been accurately described and lucidly discussed by Fishberg; Horace Evans [4] has recently reported a series of patients with this condition seen in the London Hospital. These attacks have commonly, in the past, been regarded as manifestations of uræmia. They have been called by many authors acute uræmia, and the various symptoms are included among the symptoms of uræmia listed in most text-books. It is now realised that the attacks may, and usually do in fact, occur in the absence of any nitrogen retention or other evidence of renal insufficiency. For this and other reasons the belief is gaining ground that they are vascular and not renal in origin, the hypothesis being that the condition is due to cerebral ischæmia induced by spasm of cerebral arterioles. While this theory of cerebral arteriolar spasm does seem the most satisfactory explanation of the observed facts, it is well to remember that the actual occurrence of such spasm has not as yet been established.

The sheet anchor in the treatment of hypertensive encephalopathy, as of cardiac failure, is venesection. Here the results are even more remarkable than in acute heart failure. I have twice seen patients who were completely blind, cry out that they could see while the venesection was still in progress. How this relief is brought about is quite unknown, but the result may be so dramatic that it is difficult to believe that it is due merely to the lowering of blood pressure. After venesection, lumbar puncture may be performed and cerebro-spinal fluid removed. The amount of fluid to remove depends on the cerebro-spinal fluid pressure; fluid should be removed until the flow is reduced to a slow drip. It is unwise to perform lumbar puncture before venesection is carried out, when hypertension is present, because a few instances of subarachnoid hæmorrhage following puncture in these circumstances have been described. I have seen one such case. If the signs of encephalopathy persist, lumbar puncture may be repeated or intravenous injection of hypertonic sodium chloride, 30–50 c.cm. of 15 per cent. solution, may be made. Morphia is important and should be used freely. Saline purgation is also desirable in such cases.

ANÆMIA AND FOCAL INFECTION

Nearly all patients with acute nephritis develop a well-marked secondary anæmia. The adequate treatment of this anæmia with large doses of iron—pil. ferri grs. 30 t.d.s.—forms an important feature

† It would be more accurate to speak of venepuncture. The apparatus I use is constructed as follows: a 1000 c.cm. flask is fitted with a rubber stopper through which pass two lengths of glass tubing. The longer of these, which reaches nearly to the bottom of the flask, is connected by rubber tubing with the needle. The short one, which only just projects into the flask, is furnished with rubber tubing with a glass mouthpiece. When the operator has the needle in the vein gentle suction on the mouthpiece creates a partial vacuum in the flask which insures an adequate flow of blood. A sphygmomanometer band is used for constricting the arm and the pressure adjusted so that maximal flow is obtained.

in the treatment. The iron should be continued until all evidence of anæmia has disappeared. Patients with acute nephritis should wear woollen night-clothes and be nursed between blankets. When they get up, woollen underclothes should be worn and they should be warned against cold and wet. Cold bathing and swimming should be prohibited.

The treatment of foci of infection—such as chronically inflamed tonsils, infected teeth and pyorrhœa, or chronically discharging ears—is important. Difficulty will frequently arise as to the best time to undertake their surgical treatment. As exacerbation or recrudescence of the nephritic symptoms frequently follows surgical interference, it is usually better to allow the more severe symptoms, œdema and hypertension, to disappear before attempting surgical removal of infected teeth or tonsils. Should, however, the hypertension persist and the albuminuria fail to diminish, it is better to proceed forthwith.

The Treatment of Œdema

So far my discussion of treatment has been the treatment of the case with acute onset. In such patients œdema does not usually play a prominent rôle, being relatively slight in degree and disappearing rapidly with rest in bed. Clinically these cases are characterised by an acute onset, not infrequently associated with fever and abdominal or lumbar pain, by hæmaturia, by puffiness of the face and subcutaneous tissues without gross anasarca, by varying degrees of hypertension, and not infrequently by nitrogen retention. They are characterised pathologically by profuse endothelial proliferation of the glomerular tufts, a marked proliferative glomerulitis.

I shall now consider the treatment of the less common but more difficult type in which œdema is usually the first and often the only symptom. Clinically these cases are characterised by the presence of gross œdema; albuminuria is usually severe, hæmaturia is slight or entirely absent, hypertension and nitrogen retention do not usually occur; there is marked hypo-albuminæmia. Pathologically these subjects may be separated into two readily distinguishable groups on the basis of the changes occurring in the glomeruli: (1) the less intense forms of acute diffuse nephritis; (2) a small group in which glomerular changes are very slight or are absent, the condition now commonly known as nephrosis. The clinical differentiation of these two types, the nephrotic type of diffuse nephritis, and nephrosis, is frequently difficult and often impossible. For this reason and because I believe their treatment to be identical—namely, the attempt to relieve œdema—I propose to consider them together and to discuss their treatment under the general heading, the treatment of œdema.

It appears probable that œdema in nephritis can, as Fishberg has suggested, be due to three entirely different mechanisms:—

(1) Increased capillary permeability due to the same cause as is responsible for the damage to the glomerular capillaries. This is the œdema occurring at the onset of acute diffuse nephritis.

(2) Disturbances of physical relationships between the fluid in the vessels and in the tissues. The most important of these appears to be the diminished colloid osmotic pressure of the blood resulting from a diminished protein content of the plasma such as may occur in patients with prolonged albuminuria.

(3) The œdema of cardiac failure, a not infrequent complication of nephritis in the late stages associated with high blood pressure.

These three types of œdema have been designated nephritic, nephrotic, and cardiac. It will be noted that in no instance is œdema ascribed to an inability of the kidney to excrete water. The first of these three forms of œdema, the œdema of onset, I have already considered. As I have pointed out, it responds readily to treatment. Cardiac œdema will be considered later when I come to the care of chronic cases. It is with the second, the so-called "nephrotic" œdema, that I am now concerned.

"NEPHROTIC" ŒDEMA

This type of œdema is characteristic of the intermediate stage of diffuse nephritis and of nephrosis throughout its course. The exact mechanism of its occurrence is not fully understood, but the important factor is a marked diminution in the plasma proteins. The protein content of normal plasma is 7–8 g. per 100 c.cm. The plasma proteins consist of serum albumin, serum globulin, and fibrinogen. They constitute four-fifths of the solids of the plasma. These proteins exert an osmotic pressure of from 25 to 30 mm. Hg within the vessels. This counteracts the outward hydrostatic pressure of the blood pressure which in the capillary circulation is of approximately the same magnitude. In nephrosis and in diffuse nephritis in the intermediate stage large amounts of albumin are excreted in the urine over long periods of time. As a result the protein of the plasma, and particularly the albumin, is diminished and if adequate compensation in the form of increased production of plasma protein fails, this diminution of the albumin fraction may become marked.‡ In this way the osmotic pressure within the capillaries is lowered and becomes insufficient to counteract the hydrostatic pressure of the circulation. Exchange of fluid between vessels and tissues is thus interfered with and œdema develops. It has been found that a total protein content of 5 g. per 100 c.cm. represents roughly a critical level; if the proteins are above this, œdema does not occur; if they fall below it œdema results, the degree of œdema being roughly commensurate with the degree of their fall. Other factors, of course, enter into the mechanism of the transudation of fluid from the vessels, and it is these which explain the variations from the above rule seen in individual cases. There is to-day, however, no doubt of the essential relation between lowered protein osmotic pressure and œdema of this type. It is interesting to note that Bright's collaborators over a century ago believed nephritic œdema to be due to a diminished protein content of the blood.

The treatment of œdema of this type should obviously be directed to limiting the protein loss in the urine and to stimulating the production of plasma protein. Unfortunately we know no direct method for attaining either of these ends. The multitude of remedies employed in the treatment of nephrotic œdema is striking testimony of the inadequacy of our treatment. High protein diet, urea administration, salt restriction, water restriction, acids such as calcium chloride and ammonium nitrate, alkalis such as sodium bicarbonate and potassium citrate, thyroid extract, Novasurol and Salyrgan, protein shock, X ray radiation, decapsulation, removal of infected foci, and even intravenous hypertonic saline have all been reported as yielding on occasions dramatic results. What is the meaning of this ridiculous array of therapeutic measures so different and often so contrary in their physiological effects? The explanation of their reputedly successful use depends, in my

‡ There is some evidence that a primary failure of serum albumin formation, such as is found in "starvation" or "nutritional" œdema, may also occur. This, rather than albumin loss in the urine, may be the essential mechanism in some cases of nephrosis.

opinion, partly on inadequate control in observation, and partly on confusion of the nephritic and nephrotic types of œdema. The great majority of patients with nephritic œdema promptly lose their œdema when put to bed in hospital, whatever the treatment employed. The disappearance of œdema is then, not unnaturally, ascribed to whichever remedy is being in the case employed. I believe that in gauging the effect of any treatment on œdema, only those patients should be considered in whom œdema has persisted after three weeks in bed in hospital. Using this rigorous system of control I have been unable to find any treatment which is satisfactory; and when the œdema has disappeared and recovery occurred, I have never seen any real evidence that my treatment was responsible.

On theoretical grounds I advocate and employ a high-protein diet to try to make up for the large protein loss, a restriction of fluids to a pint or a pint and a half in 24 hours, restriction of salt in the diet, and the administration of urea by mouth in doses of 20 g. three times daily. The latter is sometimes undoubtedly effective, it has the disadvantage in many patients of causing considerable thirst. It should, of course, never be employed if nitrogen retention is present.

I have seen no decisive results from any of the special methods of treatment, acids and alkalis, thyroid extract, and novasurol and salyrgan, even when combined with acid-forming salts, have been equally ineffective in my hands, though I cannot claim to have given the last-named an extensive trial. Protein shock, X ray radiation, and decapsulation I have not tried.

In considering the general care of patients with nephrosis it should always be remembered that, no matter how long the patient has been ill, recovery ought to occur, and probably will occur, if secondary infection does not develop. The patients should be confined to bed, should be kept warm and away from draughts, and everything should be done to encourage their usually feeble appetite. For this reason salt restriction, if ineffectual, should not be too rigid. The diet should be varied and attractive, should contain a large amount of protein and only needs restriction as to salt and salty foods (salt fish, salt pork, &c.). Large quantities of milk are not advisable because of their relatively high salt content. Anæmia should be looked for and, if present, iron in large doses should be given. Pleural effusions are common and any complaint of breathlessness should lead to suspicion of their presence. The effusions are often bilateral and even large effusions may give relatively trifling signs. If breathlessness is present, the effusions should be aspirated. Aspiration of ascites should, if possible, be avoided because of the danger of secondary infection. Foci of infection should be searched for and, if found, removed when possible.

Treatment of Chronic Nephritis

Once the disease has passed into the chronic stage, the treatment becomes largely symptomatic. Though little can be done to arrest the progress of the disease in the kidney, considerable improvement in the condition of the patient can sometimes be obtained. I should like to stress particularly three measures which I consider important. These are, the provision of an adequate and attractive diet, the search for and treatment of anæmia which is so frequently present, and a realisation of the frequency of incipient cardiac failure and of the importance of its treatment.

Dietary restriction is, I think, often overdone in the treatment of chronic nephritis. I have already spoken of the necessity of avoiding too prolonged restriction of salt and of affording adequate protein in patients with hypo-albuminæmia. I do not think that anything is gained by severe dietary restriction in patients with chronic nephritis with arterial hypertension. In Germany salt restriction is practised in all patients with hypertension. This has never become customary in this country and I know of no real evidence of its value. Although there is little evidence that proteins are damaging in nephritis, their harmfulness is so widely and generally assumed that, until further evidence is forthcoming, protein restriction is advisable. Care must be taken, however, that dietary and salt restrictions are not overdone so that the patient's appetite and health fail in consequence. A liberal vegetarian diet with fish, chicken, cheese, milk, cream, and eggs can be allowed. Salt restriction is necessary only in patients with œdema. Fluids may be given freely unless œdema or evidence of cardiac failure is present, when their restriction is important.

Anæmia is almost constantly present in patients with chronic nephritis. Iron in large doses (pil. ferri grs. 30, crushed, three times daily) should be given and sometimes leads to a favourable response, with great subjective benefit to the patient. If Blaud's pill is not well tolerated, iron and ammonium citrate should be tried.

Some degree of heart failure is often present in patients with chronic nephritis with hypertension. This cardiac failure, by limiting blood flow through the kidney, can accentuate or precipitate renal failure. It may thus happen that the symptoms of renal failure may overshadow the other symptoms of cardiac failure, the presence of which may thus fail to be realised. Œdema, breathlessness, particularly paroxysmal attacks of nocturnal breathlessness, enlargement and tenderness of the liver, are evidence of cardiac failure. Treatment of the failure by rest and digitalis, with strict restriction of fluid, leads often to great improvement in the condition and relief to the patient. It should be remembered that a high blood urea is common in cardiac failure in these patients. Caution therefore is necessary in using nitrogen retention as a measure of renal destruction if any evidence of heart failure is present.

Acute heart failure and hypertensive encephalopathy, as described in discussing acute nephritis, may also occur in patients with chronic nephritis with arterial hypertension. Their manifestations and treatment are the same as in acute nephritis, but venesection must be used more sparingly in chronic states because of the severe anæmia which is usually present. The paroxysmal attacks of severe headache and vomiting occurring at intervals in patients with chronic nephritis and hypertension are usually hypertensive cerebral attacks. Treatment for this condition may give considerable symptomatic relief.

I hope I have been able to indicate that the treatment of nephritis is not the negligible matter it is sometimes considered, but that it demands constant skill and attention on the part of both physician and nurse. I am confident that a diminished mortality, and a more favourable course in the acute disease, and some subjective relief to the patient in the very distressing terminal stages of chronic nephritis can be attained by an intelligent application of the measures suggested.

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ON THE ALLEGED DANGERS OF THE BARBITURATES*

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IN this paper I am concerned with the possible dangers of the barbiturate group of drugs and especially with any possible relationship between therapeutic dose and lethal effect. The belief that exists in some quarters that the barbiturates are dangerous implies one or other or all of the following three assumptions:—

1. That they are dangerous in therapeutic doses; that is that the margin between the therapeutic dose and the lethal one reaches vanishing point in at least some cases, and/or
2. That they are a ready means of suicide, and as such influence the suicidal-rate of the population in an upward direction, and/or
3. That the use of the barbiturates gives rise to addiction.

I am excluding, to an appendix, the examples where barbiturates have been employed as a means of *Dauernarkose* or treatment by continuous prolonged sleep, for that method deliberately employs doses exceeding the accepted therapeutic limits.

I am here concerned mainly with the first of these possibilities—namely, that therapeutic doses of the barbiturates are or can be dangerous to life. In order to examine this question I have had a search made of what I believe to be the entire literature available in this country, with the exception of a few papers (nine in all) to which a reference only has been obtained. A list of these has been appended (Table II.), together with a note of four other papers, not procurable, of which details have been found elsewhere. There may also be some whose existence has not become known to me.

Table I. is a list of all the papers reporting fatalities up to the end of 1932. Each has been tabulated according to the year of occurrence, with the dose where known, complications where present, the name of the particular preparation, and the name of the author, together with as far as possible the names of the authors who have quoted the same cases. Where suicide was probably intended, this also is indicated. The papers have been subdivided according to the drug used, and all fatalities have been included so as to give some idea of the relationship between the ordinary therapeutic dose and the minimum lethal one.

A PREVIOUS SURVEY

The only previous paper on these lines in this country, which was read by H. M. A. Young [45] in a discussion in the section of therapeutics of the Royal Society of Medicine in 1927, stated that up to that date there had been 400 recorded cases of poisoning from the barbiturates, of which 133, or approximately one-third, were fatal. In examining Dr. Young's review one is struck by the difficulties of her task, but also by the possibilities of error in it. And, in fact, on carefully checking this paper it has been found that the real number of fatal cases recorded up to that date was apparently 85, the error being produced by counting many cases more than once—sometimes even three times. An error of 48 in 85 cases, or 56 per cent., seems somewhat high in a paper which has been referred to by the opener of the discussion at the time (Sir William Willcox [67]) as "most carefully compiled" and as one on which he had founded some of his views. But it is indicative of the state of some of the literature of the subject. The number of cases recorded by Young was also swelled in some instances by recording the same case twice under the headings of different drugs. Since her tables have been the only ones hitherto available in English, it is perhaps of value to document the evidence of apparent error with some samples.

Jacobi.[32]—Young gives this as 12 cases with 12 fatalities. This is correct, but they are all old cases; that is to say, they have been previously reported, although Young has included separately the 2 cases of Ehrlich, and Schneider's case,[19] without apparently referring to the originals. Thus Young counts 9 cases as additional under "Jacobi," which had already been listed under other authors.

Nienhaus.[14]—Young gives this as 4 cases with 4 deaths. There are no new cases except a non-fatal case of Nienhaus's own. There are 7 old fatal cases and 9 old non fatal cases.

Achard, Mouzon, and Bloch.[62]—Young [9] gives this as 5 cases with 2 deaths. This is correct, but she has entered it under both veronal and dial, thus making it appear that there had been 10 cases with 4 deaths.

Rommel.[16]—Young gives this as 1 case and 1 fatality, but there are 2 cases both ending in death.

Schneller.[21]—Young quotes this as 31 cases and 5 deaths. The deaths had all been reported before, but I counted 3 of them as genuine new cases as they were Nolte's cases, of which an account was given in the *Pharmakologische Zeitschrift*, of which I could not get a copy. The other cases were Heuber's and Weig's—both of which Young therefore included twice.

Heuber [66] is quoted as 1 case, 1 death, which is correct. However, it is also quoted by Schneller and Hamilton, Geiger and Roth, and included by Young under both those headings. Then in the French literature Givkovitch Radomir included it in his Thèse de Paris as Salzbourg's case (Heuber lived at Salzburg), and as such Young has apparently included it as a veronal fatality. Thus 1 case is recorded as 4 deaths.

Tardieu, in the *Revue de Médecine* and in his Thèse de Paris,[54] also in a paper by Tardieu and Medioni.[97] This is a little complicated. Tardieu had apparently 2 cases, 1 a Chilean authoress who took an overdose of veronal, and another woman with Laennec's cirrhosis, whom he saw with another colleague, Medioni, and who died from taking too much somnifen. He apparently reported these 2 cases at a meeting, and they appeared in the *Revue de Médecine*. Then he wrote up the somnifen case with Medioni, and published it in the *Journal de Médecine*. Then he decided to make a study of the barbiturates for his thesis, and included both cases in his Thèse de Paris, 1924. Nevertheless there were only 2 cases.

According to Young, Tardieu reported 2 cases in the *Revue de Médecine*, 7 in the Thèse de Paris (the rest, except 1, are old), and the patient of Tardieu and Medioni died both from veronal and somnifen. So from 2 cases Young has extracted 6 deaths; otherwise we must suppose that 4 women with Laennec's cirrhosis died from taking the same quantity of somnifen, and 2 Chilean authoresses took each a week's supply of veronal.

Anon. and Germann.—Young quotes 2 cases of veronal poisoning in American journals in 1906, and gives the references. The following is a précis of the case in the *Boston Medical and Surgical Journal*. Male, aged 21, school teacher, suffering from insomnia. Obtained on a doctor's prescription fifty 5-grain tablets of veronal. He started taking them on Jan. 14th and died three days later in coma. The patient's brother stated that the doctor who prescribed the hypnotic had not used it before, and asked the patient how to spell the name of the drug. The case in the *Journal of the American Medical Association* was that of a male school teacher, aged 22, suffering from insomnia, who consulted his doctor and asked for a prescription for veronal. The doctor gave a prescription; the man then obtained fifty 5-grain tablets of veronal, and took them on Jan. 14th. He died 79 hours later in coma. The doctor said that a

* Expanded from a communication made to the Royal Society of Medicine on Dec. 12th last (see THE LANCET, 1933, ii., 1426).

report which had appeared in the newspapers that he had asked the patient how to spell the name of the drug was untrue, but said that he had not used the drug himself before.

There seems to be no possible doubt that these two reports concern the same patient. Yet Young has listed them as two separate deaths.

Furthermore 18 cases were omitted by Young, perhaps purposely, for reasons that are not stated in the original paper. Up to the end of 1926, therefore, the total fatalities, nearly all from large doses taken with suicidal intent, were 103. (It is possible that some cases have still been overlooked.) In the six following years 44 cases were recorded, which brings the total recorded up to the end of 1932 to 157. It is no doubt true that a number of cases go unrecorded. In this country the machinery of the coroners' courts ought to permit of the publication of data in many cases that otherwise become lost to the records, but no official effort is made to ensure this. The use made of coroners' courts in this connexion is therefore hardly scientific.

DEATHS AFTER THERAPEUTIC DOSES

The vast majority of the fatalities, however, are for doses taken with suicidal intent. It is unlikely that fatalities with small doses would escape publication if they were observed at all, unless in the most exceptional circumstances of accident or corruption. We may take it therefore that the Tables compiled for the purpose of this paper are complete as far as the literature of therapeutic doses associated with fatality are concerned.

If we extract from all recorded cases of fatality those in which death followed a therapeutic dose we find the following :—

1905. Alter [2]: Veronal grs. 15. Female age 54. Epileptic.
1913. Willcox [34]: Veronal grs. 5–20. Tabes dorsalis.
1913. Willcox [34]: Veronal grs. 10. No particulars.
1913. Willcox [34]: Veronal and paraldehyde. Exact dose not stated. Patient fell 20 feet and had a fractured sternum and ribs.
1915. "Medical Annual." Veronal grs. 15. No particulars.
1927. Pickworth [44]: Veronal grs. 15. Ref. to "Medical Annual" (same case as 1915). No particulars.
1928. Karo [50]: Pernocton 2 c.cm. Male aged 68. Operation for prostatic disease.
1922. Eichelter [51]: Pernocton. Male aged 52. Operation. Resection two-thirds of stomach, right side of heart atrophied, excitement before and after ether.

It is obvious that we must rule out for scientific purposes the case referred to by Pickworth [44] and the "Medical Annual," since nothing but the bare statement is made that death has occurred from a dose of grs. 15. The same fate must overtake Willcox's 1913 [34] "case" with veronal grs. 10, for he simply says that "cases of death have been recorded after taking veronal, even with such small doses as 10 grains." But references given by this writer in his papers on this subject to the work of other authors are unfortunately too few to allow confirmation of his statement. They are, nevertheless, apt to be quoted in the foreign literature as "Willcox's cases" without any reference to details other than the alleged doses (e.g., Tardieu [54]). We are left with Willcox's 1913 cases, the first being a man with tabes, aged 52, who took a quantity not precisely known but somewhere between five and twenty grains of veronal. The author himself at the time said "in this case it is doubtful if the drug was a factor in causing death," and I believe that most people will agree with him in this opinion. The case record is as follows :—

"The patient had suffered from tabes dorsalis for two years. He was found dead in his dressing-room two hours after being seen by his wife in a conscious condition. A tumbler was found in the room containing a small quantity of veronal. The evidence in this cases showed that the deceased could not have taken more than 20 grains of the drug, and probably much less was taken (about 5 grains only). The post-mortem signs showed dilatation of the heart and brown atrophy of its muscle. The lungs showed œdema and hypostatic congestion. *Verdict*: 'Syncope from heart disease accelerated by veronal taken to produce sleep while the patient was suffering from tabes dorsalis.' In this case it is doubtful if the drug was a factor in causing death."

With regard to the third of Willcox's 1913 cases, he said, "it is extremely doubtful if death was in any way accelerated by veronal." None of these three cases therefore is relevant to the present question.

Alter's [2] case is less simple.

The patient was a woman of 54, an epileptic, who had been ill for some years, had been for a year previous in an institution, and suffered also from repeated dream states. The cycle was always the same; with a temporary cessation of fits, there appeared a dulling of consciousness deepening slowly to complete confusion with illusions, illusory recognition, and exceptional restlessness. After a week of one of these episodes at the end of a very restless day, in which she was still in good general condition, she was given veronal grs. 15. The following morning there was a rapid enfeeblement of the respiration which approximated to the Cheyne-Stokes type with long periods of apnœa. The pupils were very small and did not react to light. The corneal reflexes were very faint. Tendon and skin reflexes had disappeared. There was flaccid paralysis of the limbs and enuresis. The temperature began to rise and rose ultimately to 41·4° C. The pulse weakened. There was a trace of albumin in the urine and some blood in the stools. The patient died 60 hours later after some pulmonary œdema had been noticed.

This case of Alter's has been much discussed and opinions both for and against the view that veronal was the main cause of death have been stated. I submit that the following facts are important against this view. The patient was an institutional inmate suffering from epilepsy of undiagnosed origin and there was no autopsy. It seems to me that the probability of its being a barbiturate death is much diminished by the fact that in all the 30 years of experience with veronal since it was introduced, there has been no instance of death recorded with doses of this order of magnitude except those which I have mentioned and given reasons for discarding.

In the pernocton deaths which were recorded with therapeutic doses the details are as follows :—

Karo, [50] in 1928, reported the death of a patient, 68 years of age, who had been operated on for prostatic disease, after a dose of sodium brompropenylisobutyl barbituric acid had been given. The patient weighed 68 kg. Several hours after the operation the patient collapsed and died.

Eichelter, [51] in 1922, reported a case of death from brompropenylisobutyl barbituric acid 0·0071 g. intravenously per kg. body-weight. Anæsthesia was incomplete and ether was given by the open drop method after local anæsthesia had failed. The operation lasted one and a half hours and two-thirds of the stomach was resected. The patient was returned to his room in good condition. Later he became asphyxiated and pulseless. He died five hours after operation despite all measures to support circulation and respiration (Lundy and Osterberg, [52] Staff Meetings of the Mayo Clinic, Dec. 18th, 1929).

It appears very dubious to attribute these two deaths solely or mainly to pernocton. Both occurred in elderly persons during collapse a few hours after a major operation—a form of death which is different from the recognised type of barbiturate death which occurs slowly in coma, after many hours, usually with hypostatic pneumonia; although with large and continuous doses such as are used in *Dauernarkose*

TABLE I.—*Fatalities Associated with Barbiturate Drugs, Recorded up to the end of 1932*

Year.	Fatalities: new cases.	Dose. Grains	Dose. Grammes	Suicide, addiction, accident or therapeutic.	Fatalities: old cases.	Ref. No. and author.	Reference.	Quoted by—	Complications: remarks.
						VERONAL			
1905	1	7½–30 daily for 11 mos.	0·5–2·0 daily for 11 mos.	Add.	..	1 Kress.	Therap. Monats., 1905, xix., 470.	Givkovitch Radomir,[67] Tardieu,[55] Caussade and Lejard,[61] Hamilton, Geiger, and Roth,[59] Schneller, Lebeaupin, Bosquet.	..
,,	1	15	1	Th.	..	2 Alter.	Münch. med. Woch., 1905, lii., 514.	Jacobi,[32] Vallon and Bessière,[33] Tardieu,[54] Lebeaupin, Bosquet, Steindorff.[56]	Epilepsy, dream states.
,,	1	150	10	Acc.	..	3 Harnack.	Ibid., 1905, lii., 2269.	Jacobi,[32] Huseman,[39] Tardieu,[55] Nienhaus, Umber.[10]	Holzenminder's case.
,,	1	?	?	? S.	..	4 Farncomb.	Canad. Pract. and Rev., 1905, xxx., 681.	Lundy and Osterberg.[65]	..
,,	1	23–46	1½–3	..	..	5 Friedal.	Zeits. f. Med.-Beamte, 1905, xvi., 770.	Jacobi,[32] Boenheim,[46] Huseman,[39] Umber.[10]	Cardiac weakness; severe operation.
,,	1	..	..	..	..	*6 Lewinski.	Zahnärztl. Rundschau, Berlin, 1906, xiv., 837.	..	..
,,	1	250	16	S.	..	7 Germann.	Jour. Amer. Med. Assoc., 1905, xlvi., 1999.	Boston Med. and Surg. Jour.,[5] Jacobi.	..
1906	..	..	..	..	1	8 Anon.	Boston Med. and Surg. Jour., 1906, cliv., 113.	..	..
,,	2	463	30	S.	..	9 Ehrlich.	Münch. med. Woch., 1906, xii., 599.	Vallon and Bessière,[33] G. Radomir,[67] Jacobi,[32] Boenheim,[46] Nienhaus,[13] Umber.[10]	..
		170	11	S.	..	,,	,, ,,	Jacobi,[32] Boenheim,[46] Pollitzer,[39] Nienhaus,[13] Umber,[10] Steindorff.	Pariser's case.
,,	1	310	20	S.	4	10 Umber.	Münch. med. Woch., 1906, liii., 2556; and Med. Klin., 1906, ii., 1254.	Steindorff, Schubiger,[60] Tardieu,[54] Boenheim.[46]	..
,,	2	123–154	8–10	S.	..	11 Zornlaib.	Wien. med. Woch., 1906, lvi., 2454.	Jacobi,[32] Boenheim,[46] Huseman.[39]	..
		93	6	S.	..	,,	,,	..	..
,,	1	154	10	S.	..	12 Hampke.	Inaug. Dissert., Leipzig, 1906.	Jacobi,[32] Huseman.[39]	Alcoholic; ? tabes
,,	1	110	11	S.	..	*13 Schneider.	Prager med. Woch., 1906, p. 435.	Jacobi,[32] Boenheim,[46] Nienhaus.[13]	..
1907	..	..	..	..	7	14 Nienhaus.	Corr.-blatt. f. Schweiz. Aerzt., 1907, xxxvii., 366.	Schubiger.[60]	..
1908	1	60	4	..	..	15 Parsons.	Brit. Med. Jour., 1908, ii., 832.	..	Confinement; child also died.
,,	1	139 in 3 days.	9 in 3 days.	..	..	*16 Koch.	Nederland. tijdsch. v. geneesk., 1908, xliv., 326.	Huseman[39] (in full).	..
,,	1	150	0·75	S.	..	*17 Stucky.	Louisville Monthly Jour. Med. and Surg., 1908, xiv., 241.	Lundy and Osterberg.[65]	..
,,	10	..	..	..	..	18 Panzer.	Vrtljschr. f. ger. Med., 1908, xxxii., 311.	..	P.M. material only.
1909	1	About 100	6·5	S.	..	19 Davies.	Brit. Med. Jour., 1909, ii., 1154.	Munro,[57] McCrae and College.[23]	..
,,	1	?	?	S.	..	20 Anon.	Ibid., 1909, ii., 1321.	..	..
,,	2	?	?	? S. ? Add.	..	21 ,,	The Lancet, 1909, ii., 760.	..	..
		,,	,,	,,	..	,,	,,	..	..
,,	..	..	..	..	12	22 Jacobi.	Vrtljschr. f. ger. Med., 1909. xxvii., 222.	Schubiger,[60] Steindorff.[56]	..
,,	1	91	6	? S.	..	23 Walker.	The Lancet, 1909, i., 1557.	..	..
1911	1	..	..	..	..	*24 Heiduschka.	Arch. d. Pharm., 1911, ccxlix., 322.	Lundy and Osterberg.[65]	..
,,	1	..	..	..	..	*25 Veress.	Budapest. orvosi ujság, 1911, ix., 226.	..	..
1910	1	?	..	S.	..	26 Anon.	Pharmaceutical Jour., 1910.	..	..
1912	1	85	5·40	S.	..	27 McLean.	The Lancet, 1912, i., 647.	Tardieu.[54]	..
,,	2	377	25	S.	..	28 Romell.	Charité Ann., Berlin, 1912, xxxvi., 62.	..	..
		154	10	S.	..	,,	,, ,,	..	..
,,	..	..	..	..	2	29 Pollitzer.	Jour. Cutan. Dis., N.Y., 1912, xxx., 185.	Lundy and Osterberg.[65]	..
,,	2	252 in 5 days.	..	Add.	4	30 McCrae and College.	Pharmaceutical Jour., 1912, xxxiv., 724.	..	Alcoholic.
		177	..	S.	..	,,	,, ,,	..	..
,,	2	115	..	S.	..	31 Weitz.	Festschr. f. d. allgemein. Krankenhaus St. Georg, 1912.	Boenheim.[46]	..
		189	..	S.	..	,,		..	..
1913	2	139	9	S.	2	32 Vallon and Bessière.	Encéphale, 1913, viii., 253.	..	..
		154½	10	S.	..	,,	,, ,,	..	..

* = original paper not seen by me.

TABLE I.—*Fatalities Associated with Barbiturate Drugs, Recorded up to the end of 1932—(Continued)*

Year.	Fatalities: new cases.	Dose. Grains	Dose. Grammes	Suicide, addiction, accident or therapeutic.	Fatalities: old cases.	Ref. No. and author.	Reference.	Quoted by—	Complications: remarks.
				VERONAL					
1913	1	150	9·6	S.	..	33 Editorial.	Brit. Med. Jour., 1913, i., 566.	..	..
,,	8	?	?	? S.	..	34 Willcox.	The Lancet, 1913, ii., 1178.	..	Congestion of lungs.
		?	?	? Add.	..	,,	,, ,,	..	Cancer of stomach and breast.
		? 5	..	..	..	,,	,, ,,	Tardieu[44] (no mention of complications).	Tabes dorsalis.
		?	?	? Add.	..	,,	,, ,,	..	Pneumonia and heart failure.
		?	?	? Add.	..	,,	,, ,,	..	..
		?	..	Ther.	..	,,	,, ,,	..	Fractured sternum and ribs; took veronal and paraldehyde.
		? 100	..	S.	..	,	,, ,,	Tardieu.[44]	..
		? 150	..	S.	..	,,	,, ,,	..	..
1914	..	120	..	? Acc.	..	35 Fraser.	The Lancet, 1914, i., 1736.	Munro.[37]	..
,,	3	..	..	..	..	*36 Jansch.	Kolisko's Forensic Medicine, 2nd ed., 1914.	..	..
,,	1	90	..	..	6	37 Munro.	Brit. Med. Jour., 1914, i., 854.	Schubiger.[40]	No. ref.; no details.
,,	1	15–50	..	? S.	..	38 Russell and Parker.	Ibid., 1914, i., 853.	Schubiger.[40]	..
1915	1	?	..	? Add.	12	39 Huseman.	Vrtljschr. f. ger. Med., 1915, xlix., 150.	Willcox.[37]	..
1917	1	..	15 (+) in 8 days	Add.	5	40 Schubiger.	Corr.-blatt. f. Schweiz. Aerzt., 1917, xlvi., 1741	..	..
1918	2	?	..	?	..	41 Editorial.	Brit. Med. Jour., 1918, i., 182.	..	..
,,	2	?	..	? Add.	..	42 Weitz.	Med. klin., 1918, xiv., 159.	..	..
		46/61	3–4	...	..	,,	,, ,,	..	Alcoholic.
,,	1	75	..	S.	..	43 Gautier.	Rev. méd. Suisse rom., 1918, xxxviii., 641.	..	..
	1	..	5–6	..	..	44 Roy des Barres.	Bull. Soc. méd. chir. de l'Indo-Chine, 1918.	Tardieu,[44] Givkovitch Radomir.[47]	..
1919	2	?	..	? S.	..	45 Römer.	Deut. med. Woch., 1919, xlv., 1305.	..	..
		?	..	? S.	..	,,	,, ,,	..	Pos. Wassermann. Veronal and morphia in urine.
1922	5	155	10	S.	..	46 Boenheim.	Med. Klin., 1921, xvii., 1263.	..	Previous attempt with 10 g.
		185	12	S.	..	,,	,, ,,	..	..
		232	15	S.	..	,,	,, ,,	..	..
		?	..	S.	..	,	,, ,,	..	..
		?	..	S.	..	,,	,, ,,	..	..
,,	..	..	..	..	126	47 Renner.	Zeits. f. Aerztl. Fortbildung, 1922, xix., 327.	Bofinger.[48].	..
,,	1	..	..	..	..	*48 Belohradsky.	Zentrabl. f. inn. Med., 1922, xii., 416.	Boenheim.[46]	..
1923	1	60–75	4–5	S.	..	49 Herz.	Deut. med. Woch., 1923, xlix., 416.	Tardieu.[44]	..
,,	1	75	5	S.	..	50 Bofinger.	Ibid., 1922, xlviii., 1518.	Herz.[49]	..
,,	1	68	4·5	..	..	51 Ortner.	Wien. med. Woch., 1923, lxxiii., 631.	..	..
,,	1	300 in 4 weeks. 174 in 4 days.	..	..	..	52 Cole.	Jour. Amer. Med. Assoc., 1923, lxxx., 373.	Lundy and Osterberg, Achard.[71]	..
,,	1	75	5	S.	..	53 Kromer.	Zeits. f. Aerztl. Fortbildung, 1923, xx., 461.	Lundy and Osterberg.[52]	Psychopathic.
1924	1	A week's supply.	..	..	13	54 Tardieu.	Thèse de Paris, 1924, No. 511.	..	..
,,	..	..	..	..	1	55 ,,	Rev. de méd., 1924, xli., 393.	..	..
,,	2	?	?	S.	..	56 Ipsen.	Wien. med. Woch., 1924, lxxiv., 2025.	..	..
		?	?	S.	..	,,	,, ,,	..	..
,,	1	185	12	S.	7	57 Givkovitch Radomir.	Thèse de Paris, 1924, No. 411.	..	..
1925	1	240	15	S.	1	58 Sydney Smith	Forensic Medicine, London, 1925, p. 373.	..	..
,,	Sev.	..	..	..	..	59 Leake and Ware.	Jour. Amer. Med. Assoc., 1925, lxxxiv., 434.	..	No details of cases
,,	1	? 154	? 10	S.	..	60 Rivet, Janet and Herbain	Bull. et mém. Soc. méd. hôp. de Paris, 1925, xlix., 276.	Achard.[71]	..
,,	1	..	?	S.	..	Huber.	,, ,,	Achard.[71]	..
,,	1	..	?	S.	..	Massary.	,, ,,	Achard.[71]	..

* = original paper not seen by me. Sev. = several.

where continuous sleep for many days is aimed at, death in collapse has been recorded.[106]

As regards nembutal, and Willcox's unqualified statement in the *Practitioner* of April, 1933, that this drug had been responsible for several deaths—presumably from therapeutic doses—I believe that if three of these cases, comprising the majority of the nembutal fatalities referred to, were published, the

TABLE I.—*Fatalities Associated with Barbiturate Drugs, Recorded up to the end of 1932—(Continued)*

Year.	Fatalities: new cases.	Dose. Grains	Dose. Grammes	Suicide, addiction, accident or therapeutic.	Fatalities: old cases.	Ref. No. and author.	Reference.	Quoted by—	Complications: remarks.
						VERONAL			
1925	..	..	..	..	1	61 Caussade, Tardieu, Lejard.	Ibid., xlix., 1483.	..	..
„	..	..	..	..	1	62 Paris Correspond.	Jour. Amer. Med. Assoc., 1925, xxxiv., 1134.	..	..
1926	11	..	†	S.	..	63 Redlich.	Wien. med. Woch., 1925, lxxvi., 139.	..	..
„	..	..	..	..	†	*64 Levent.	Gaz. des hôp. de Paris, 1926, xcix., 479.	..	..
1927	1	..	..	..	..	65 Young.	Proc. Roy. Soc. Med., 1927, xx., 1498.	..	Young quotes another case as fatal, but there is no direct evidence that the patient ever took a barbiturate.
„	..	..	..	..	1	66 Pickworth.	„ „	..	..
„	19	†	†	Add.	..	67 Willcox.	„ „	..	..
		† 150	9·75	† S.	..	„	„ „	..	..
		† 100	6·5	S. and add.	..	„	„ „	..	..
		Large dose.	..	S. and add.	..	„	„ „	..	..
		„	..	S.	..	„	„ „	..	In 13 other cases only P.M. findings and no clinical details given.
		†	..	† S.	..	„	„ „	..	..
„	1	150	9·75	S.	..	68 Dumitresco Mante	Bull. et mém. Soc. méd. hôp. de Bucharest, 1927, ix., 9–12.	Lundy and Osterberg.[**]	..
1928	1	75	5+	S.	..	69 Paolini.	Riforma med., 1928, xliv., 1069.	..	..
„	1	† 200	13	S.	..	70 Work.	Arch. of Neurol. and Psychiat., 1928, xix., 32.	..	..
1929	..	..	..	..	3	71 Achard.	Jour. de méd. et chir. pract., 1929, c., 279.	..	..
„	1	154	10	S.	..	72 Schröder.	Deut. Zeits. f. d. ges. gerichtl. Med., 1929, xiii., 353.	..	„
1932	1	68	4·602	S.	..	73 Gronover.	Samml. v. Vergiftungsfällen, 1932, iii., 145.	..	..
„	..	..	..	..	..	*74 Laborde and Duquénois.	Jour. de pharm. et chim., 1932, xvi., 479.	..	..
„	..	..	..	..	..	*75 Trevisanello.	Gazz. internat. med.-chir., 1932, xl., 458.	..	..
„	1	†	†	S.	..	76 Petri.	Virchows Arch. f. path. Anat., 1932, ccixxxiv., 84.	..	..
						MEDINAL			
1913	1	125	..	S.	..	34 Willcox.	The Lancet, 1913, ii., 1178.	..	..
1926	1	†	..	Add.	..	77 Stolkind.	The Lancet, 1926, i., 391. Proc. Roy. Soc. Med., 1926, xx., 1506.	..	..
1927	3	200	..	S.	..	67 Willcox.	Proc. Roy. Soc. Med., 1927, xx., 1503.	..	..
		†	..	†	..	„	„ „	..	..
		†	..	†	..	„	„ „	..	..
1932	..	..	..	..	..	*78 Incze.	Orvosi hetilap, 1930, lxxiv., 830.	..	..
						ALLONAL			
1932	1	100 tablets.	..	S.	..	79 Balázs.	Samml. v. Vergiftungsfällen, 1932, iii., 139.	..	Dosage of tablets not stated.
						PERNOCTON			
1928	1	3 c.cm.	..	Ther.	..	80 Karo.	Münch. med. Woch., 1928, lxxv., 1555.	Lundy and Osterberg.[**]	..
						81 Eichelter.	Zentralbl. f. Chir., 1928, lvi., 2378.	Lundy and Osterberg.[**]	Morphine, 0·02; atropine, 0·001; and pernocton, 0·0071 g. per kg. body-weight.
1929	..	..	..	..	2	82 Lundy and Osterberg.	Proc. Mayo Clinic, 1929, iv., 386.	..	..

* = original paper not seen by me.

details of which are privately known, it would be evident that they did not give by any means unqualified support to the inference that nembutal is dangerous in therapeutic doses. No death from nembutal had in fact been recorded in the scientific literature up to the time of Willcox's statement. That there may be contraindications, as with other medicaments, no one will dispute. For example, the

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Year.	Fatalities: new cases.	Dose. Grains	Dose. Grammes	Suicide, addiction, accident or therapeutic.	Fatalities: old cases.	Ref. No. and author.	Reference.	Quoted by—	Complications: remarks.
				DIAL					
1924	1	?	?	? S.	..	57 Givkovitch Radomir.	Thèse de Paris, 1924, No. 411.	..	..
1925	2	..	0·80+4 tablets veronal.	S.	..	83 Achard, Mouzon, and Bloch.	Bull. de l'Acad. de Méd., 1925, xciii., 732.	..	Took veronal also.
			2	S.	..	,,	,, ,,	..	..
1929	..	..	1·9	S.	..	84 Van Itallie and Steenhauer.	Samml. v. Vergiftungsfällen, 1932, iii., 141.	..	..
				LUMINAL					
1919	1	40+10 c.cm. tinct. opii.	..	S.	..	85 Rosenberg.	Med. Klin., 1919, xv., 1150.	..	Psychopathic.
,,	1	..	15 in 28 days.	Ther.	..	86 Heuber.	Münch. med. Woch., 1919, lvi., 1090.	G. Radomir,[87] Schneller,[91] Hamilton, Geiger, and Roth.[89]	Epilepsy. Old tuberculosis flared up.
1920	3	?	?	?	..	*87 Nolte.	Pharm. Zeits., 1920, p. 320.	Schneller.[91]	Luminal not found post mortem.
			2 in 24 hours.	?	..	,,	,, ,,	Schneller.[91]	,,
			3–4 in 6 hours.	?	..	,,	,, ,,	Schneller.[91]	,,
1924	1	..	..	?	..	54 Tardieu.	Thèse de Paris, 1924, No. 511.	..	Chavigny and Rullman's case.
,,	..	..	..	..	1	57 Givkovitch Radomir.	Ibid., 1924, p. 411.	..	..
1925	1	15	1	..	..	88 Weig.	Deut. med. Woch., 1925, li., 272.	Lundy and Osterberg.[83]	Aged 67. Arteriosclerosis.
1926	..	..	..	..	1	89 Hamilton, Geiger, and Roth.	Illinois Med. Jour., 1926, xlix., 344.	..	..
1925	1	?	?	Add.	..	90 Steindorff.	Deut. med. Woch., 1928, li., 1565.	..	Also took veronal, adalin, pantopon.
1926	..	..	..	..	5	91 Schneller.	Deut. Zeits. f. d. ges. gerichtl. Med., 1928, vii., 265.	..	..
1927	1	?	?	?	..	67 Willcox.	Proc. Roy. Soc. Med., 1927, xx., 1503.	..	P.M. analysis only.
1929	1	?	?	Add.	..	92 Wright, N.	Arch. Internal Med., 1929, xliii., 85.	Lundy and Osterberg.[83]	..
,,	1	..	12	S.	8	93 Achard.	Jour. de méd. et chir. pract., 1929, c., 279.	..	..
,,	..	..	..	..	2	82 Lundy and Osterberg.	Proc. Staff Meet. Mayo Clin., 1929, iv., 386.	..	..
1932	3	..	2–3	S.	..	94 Schou, A. H.	Ugeskr. f. laeger, 1932, cxiv., 492.	..	Epilepsy.
		?	?	..	..	,,	,, ,,	..	,,
		?	?	..	..	,,	,, ,,	..	,,
,,	1	47–62	3–4	S.	..	95 Clemenson.	Ibid., 1932, cxiv., 493.	..	,,
				SEVENAL					
1932	2	?	?	S.	..	96 Jankovitch and Fazekas.	Monats. f. Psychiat. u. Neurol., 1932, lxxxiv., 15.	..	Melancholia.
			0·5 daily for a year.	Ther.	..	,,	,, ,,	..	Epilepsy.
				SOMNIFEN					
1924	1	30 drops +10 c.cm.	..	..	..	97 Tardieu and Medioni.	Jour. de méd. de Paris, 1924, xliii., 354.	Lundy and Osterberg,[83] Tardieu.[54]	Laennec's cirrhosis.
,,	..	..	..	..	1	54 Tardieu.	Thèse de Paris, 1924, No. 511.	Achard.[93]	..
1925	1	10 c.cm. intramus	..	?	..	98 Caussade, Tardieu, and Lejard.	Bull. et mém. Soc. méd. hôp. de Paris, 1925, xlix., 1483.	Achard,[93] Ravina, and Girot.	Attempted suicide by other means. Quercy and Lancelot's case.
,,	1	10 c.cm. intraven.	..	Ther.	..	99 Ravina and Girot.	Ibid., 1925, xlix., 370.	Achard.[93]	..
1928	1	13 c.cm.	..	S.	..	100 Hammer.	Deut. med. Woch., 1928, liv., 1340.	Lundy and Osterberg.[83]	..
1929	?	..	..	..	..	*101 Milewski.	Polska gaz. lek., 1929, viii., 107.	..	..
,,	..	..	..	..	2	82 Lundy and Osterberg.	Proc. Staff Meet. Mayo Clin., 1929, iv., 386.	..	..

* = original paper not seen by me.
Sev. = Several. Intram. = Intramuscular. Intrav. = Intravenous.

fact that a man of 62, although he did not die, had unconsciousness for 36 hours after nembutal suggests that as with all the barbiturates age is an indication for a smaller dose and for additional caution. The general experience is in fact against the contention of danger in therapeutic doses, at least in people not suffering from organic disease or undergoing a major operation. Curran and Minski [102] at the Maudsley Hospital used doses up to grs. 12½ in 24 hours, sometimes for weeks on end. In collaboration with Dr. R. R. Mackintosh and Dr. W. MacNaught the following

TABLE II.—PAPERS NOT SEEN

NO PARTICULARS OF CASES

		Cases.	
1905	Lewinski.	1	Zahnärztl. Rundschau, 1905, iv., 837.
1911	Heiduschka.	1	Arch. d. Pharm., 1911, ccxlix., 322.
1911	Veress.	1	Budapest. orvasi ujság, 1911, ix., 226.
1922	Belohradsky.	1	Zbl. f. inn. Med., 1922, xli., 1416.
1914	Jansch.	3	Forensic Medicine (Alex. Koliško), 2nd ed.
1926	Creutzfeldt.	1	Zeits. f. d. ges. Neurol. u. Psychiat., 1926, ci., 97.
1929	Milewski.	..	Polska gaz. lek., 1929, viii., 107.
1932	Laborde and Duquénois.	1	Jour. de. pharm. et chim., 1932, xvi., 479.
1932	Trevisanello.	..	Gazz. internat. med.-chirg., 1932, xl., 458.

PARTICULARS OBTAINED ELSEWHERE

1907	Schneider, S.	1	Prager med. Woch., 1906, p. 436. Quoted from Nienhaus, Corr.-blatt. f. Schweiz. Aerzt., and checked by Jacobi and Boenheim's articles.
1908	Stucky, S.	1	Louisville Monthly Jour. Med. and Surg., 1908, xiv., 241. Quoted from Lundy and Osterberg, Proc. Staff Meetings Mayo Clinic, 1929, iv., 51, 386.
1920	Nolte.	3	Pharmazeut. Zeits., 1920, S. 320. Quoted by Schneller.
1927	Dumitresco, Monte.	1	Bull. et mém Soc. méd. hôp. de Bucharest, 1927, ix., 9. Quoted from Lundy and Osterberg.

doses were used for a morphine addict to enable withdrawal of the morphine to be complete. I can testify that there was never any cause for anxiety.

	July 6	7	8	9	10	11	12	13-19	20-23
Nembutal grs.	..24..	13½..	7½..	9..	9..	8..	7½..	7½..	2½
Chloral grs.	..50..	15	..22..	25					
Hyoscine ..	..	1/100th							

Even with this dosage the patient's condition was not one of nearly continuous sleep such as is aimed at with the method of *Dauernarkose*. Obviously such doses can only be given under the most careful supervision, but the case is of interest in obtaining a balanced view of the question.

As regards *repeated doses* of the barbiturates, the lowest recorded continuous dosage of veronal which was lethal was grs. 174 over four days. This represents a considerable excess over the customary daily therapeutic dosage of veronal. Where repeated dosage is too heavy, or if the patient has an idiosyncrasy the fact nearly always declares itself in the form of toxic signs which give ample warning; hence doubtless the rarity with which repeated dosage appears to have proved fatal.

SOME CONCLUSIONS FROM THE RECORDS OF FATAL CASES

The conclusion of this part of our inquiry is this, that up to the end of 1932 there is no case on record in which barbiturates, either a single dose or repeated doses of therapeutic magnitude, have caused death in the absence of complicating factors. One possible reservation has recently been suggested by Watkins's, as yet unconfirmed, observations (see below). On inspection of the facts, no foundation can be found for Willcox's statement that "the repeated administration of these barbiturates in one or more daily doses is undoubtedly dangerous" [67]—if this is to be taken, as appears to be intended, as including all cases whatsoever, and not merely those with idiosyncrasy or certain types of bodily disease.

In complicated cases—i.e., where patients have organic disease or have had an operation—there is actually no case on record which would justify regarding as the essential cause of death a dose of a barbiturate of therapeutic magnitude, with the possible exception of Alter's.[2] It is of little scientific value to record an isolated instance of complicated death in which a barbiturate has been a factor, and to forget to set it against the actual number of cases, complicated and uncomplicated, in which a barbiturate has been used, and which do not appear in literature, because nothing untoward happens. The words of a continental author, Renner,[47] commenting on the comparatively large number of fatalities attributed to veronal in this country are very relevant here. He remarks that "what was previously regarded as an 'Act of God' is nowadays attributed to 'poisoning by narcotic drugs,'" and he adds that "it is obvious that the desire to refer things always to precise causes can in practice do violence to exact science."

The *ratio of safety*, so far as can be judged from the published records calculated as the ratio of customary maximum doses to minimum lethal doses recorded, is with veronal one in five (taking the maximum dose as grs. 10) and with luminal one in three (taking the maximum dose as grs. 5 and using as the case with the smallest lethal dose, that of an old woman). With the newer barbiturates there are not yet enough data to enable such a calculation to be made, except from inference from experiments on animals.

The occurrence of *idiosyncratic reaction* is very important. With the barbiturates in general, idiosyncrasy has to be reckoned with in a proportion of cases. By some authors this is put at 3 per cent., but this seems higher than ordinary clinical experience would suggest. The idiosyncrasy consists chiefly of skin conditions and neurological disturbances. The varieties have been recently tabulated by Lundy and Osterberg.[82] No case is recorded of a single therapeutic dose, even in an idiosyncratic patient, having a lethal effect. I have, however, some particulars of some cases, very recently observed by Watkins of the Mayo Clinic,[103] in which repeated doses of therapeutic magnitude were followed by deaths. His paper has come into my hands only since the joint discussion at the Royal Society of Medicine on Dec. 12th, 1933. His cases are very remarkable. Nothing like them has hitherto appeared in the barbiturate literature, nor had the pathology which appears to be involved been even guessed at. The reaction is apparently not specific to the barbiturates being found also occasionally with pyramidon and (I am informed by my colleague Dr. L. J. Witts) with sanocrysin.

Dr. Watkins reports 32 cases of primary agranulocytosis observed at the Mayo Clinic. Of this group of patients, 24 had taken either amidopyrin or a barbituric acid derivative for varying periods before the onset of the granulocytopenia. Of the ten patients who took amidopyrin and developed granulocytopenia, two died. One who recovered had 12 attacks of granulocytopenia in 2½ years, each attack following the use of amidopyrin. During one attack nembutal was given as well or instead of the amidopyrin and on this occasion it was noticed that there was greater difficulty in stimulating the bone-marrow to regeneration of the granulocytes than after

previous attacks. Two other patients used a mixture of amidopyrin and dial. There were no deaths in this group. Five patients had taken amytal or its sodium salt prior to the onset of the neutropenia and all patients in this group have died. One patient who died in her second attack had taken a mixture of allyisopropylbarbituric acid and amidopyrin. Four patients had taken nembutal and all of these died in their first attack of granulocytopenia. Two patients had taken luminal, of whom one died, but this patient had a generalised sepsis before the onset of the granulocytopenia and Watkins says that he feels that this case should be classified as one of granulocytopenia secondary to an overwhelming infection. In eight cases of primary agranulocytosis no record could be found that any drug had been used before onset of the illness.

Details are not published in the journal quoted, but some details have come to me privately of the paper as it was actually read in Chicago, from which it is evident that the majority of these patients were physically ill in some way or another at the time—in fact all except one of them of which I have a record; moreover all of them had several doses on successive days of either amidopyrin or a barbiturate or both combined.

From this interesting study Watkins reaches the following conclusions: "I do not feel," he says, "that the cases here considered prove that amidopyrine or derivatives of barbituric acid are ætiologic factors in producing granulocytopenia, but I do believe that it is a possibility that certain individuals have an idiosyncrasy to the drug which is manifested by granulocytopenia. If this is an idiosyncrasy it must be exceedingly rare," he says, "for enormous numbers of people use the drugs considered without known untoward reaction. A great deal of clinical and experimental evidence will be needed to establish this thesis." This is a sound comment on a very interesting observation which has never been previously reported, except in a paper referred to by Watkins in which Maddison and Squier (1933) reported a series of 13 cases of granulocytopenia which they concluded were probably due to the use of benzene chain derivatives.

Contra-indications or indications at least for special caution in the use of the barbiturates are as follows:—

(1) Old age: this is not to be regarded so much as a contra-indication as an indication for a smaller dosage.

(2) Genito-urinary disease: kidney disease may be an absolute contra-indication in the case of barbiturates other than pernocton or nembutal.

(3) In the case of these two, liver disease is to be regarded as a contra-indication as they are evidently largely destroyed in the liver.

(4) Advanced disease of the heart or lungs makes anything but small doses inadvisable. Continued administration is also inadvisable.

(5) Toxæmia of any severity from sepsis or (possibly) from hyperthyroidism.

(6) Idiosyncrasy. This possibility has to be borne particularly in mind when giving barbiturates to an individual for the first time.

SUICIDE

The Registrar-General's statistics for 1931, which are the last complete ones available to me, showed that the total of recorded suicides by all methods was 5147. Of these the number attributed to the barbiturates was 13, or 0·26 per cent. Of the poisons used for suicidal purposes, barbiturates came eighth in a list of 12 types of agent. Even allowing for cases which may have been overlooked, this seems a surprisingly small number, in view especially of the amount of advertisement these preparations have received as a means of suicide. It seems probable that we may in the near future expect a fashion in barbiturate suicides or suicidal attempts.

Since the above was written, the figures for 1932 have come to hand and show 20 barbiturate deaths

Suicides (1931)

By solid and liquid poisons, and corrosive substances	676
By poisonous gas (all but 12 coal gas)	1451
By drowning	913
By hanging or strangulation	736
By firearms	267
By cutting or piercing instruments	611
By jumping from high places	167
By crushing	263
By other means	63
	5147

Suicides by Means of Drugs belonging to the Barbituric Acid Group (1931)

Veronal	5
Medinal	2
Somnifaine	1
Dial	1
Allonal	1
Soneryl	1
Aspirin and medinal	1
Adalin	1
	13

Relative Frequency of Suicides from Various Poisons (1931)

1. Lysol	248
2. Carbolic acid	63
3. Potassium cyanide	60
4. Hydrochloric acid	31
5. Prussic acid	29
6. Ammonia	28
7. Oxalic acid	27
8. Barbituric acid	13
9. Aspirin	10
10. Sulphuric acid	7
11. Strychnine	5
12. Opium, laudanum, morphia	3
Other poisons	106

in a total of 5473 suicides. The figures since 1927 are thus:

Suicides by Drugs of the Barbituric Acid Group

Year.	Suicides from barbiturates.	Total suicides.
1932	20	5743
1931	13	5147
1930	8	5051
1929	14	4984
1928	11	4882
1927	10	4907
	76	30,714

ADDICTION

There are many considerations which make it unlikely that addiction, whether or not leading to an overdose, accidental or suicidal, is an outstanding danger with the barbiturates, although it can occur.

In the first place, the consensus of opinion among physicians whose work would be most likely to bring them in contact with addicts is that barbiturate addiction is still rare in this country. I am aware that it is probably less rare in certain other countries. It is absolutely rare, as well as relatively to the fact that the amount of barbiturates used per annum for medical purposes is very great. Anyone who declares

that addiction is common or a serious danger has to remind himself of the fallacy of the positive instance, and that his special work may above all others bring him in contact with a certain type of case, which may in fact be exceedingly uncommon.

Secondly, the burden of proof of these allegations is upon those who make them, and in this regard the following observations have to be made. Existing records of cases of alleged addiction in this country are for the most part incomplete and sometimes at least do not satisfy the ordinary scientific criteria of a convincing case-record. No statistical observations have ever been published for this country by those who allege the importance of addiction. On the other hand, a paper on which Willcox stated that he relied for much of the strength of his belief in addiction has been above shown to be inaccurate in a number of details.[65] It contains no record of first-hand experience of addiction.

Such statistics as exist on this topic are to be found in the records of one of the private special homes for the treatment of inebriety and drug addiction. The records are available for the past twenty-five years in the annual report of one of them.[104] This period roughly corresponds with the time that has elapsed since the introduction of the barbiturates thirty years ago. The figures are as follow:

Alcoholic addiction	6279
Alcoholism and another drug	106
Morphinism and its allies	580
Cocainism	38
Paraldehyde	10
Other drugs (i.e., by exclusion, barbiturates)	20

An incidence in the population of this institution, one of the best known for the purpose, of less than 1 per annum, or less than 1 per 600 cases of alcoholism in twenty-five years, does not seem to support the thesis of the prevalence of addiction.

And it has to be remembered also that barbiturates are commonly used medically in facilitating the withdrawal of drugs of addiction, including alcohol and morphine. In the above table a number of the alcoholic addictions had evidently been complicated in this way (probably the majority of the 106 mentioned as "alcohol and another drug"). Barbiturates are therefore frequently prescribed medically for just those people who are already addicted to drugs. Yet it is not the experience of those who use them thus medicinally that the patients frequently become addicted to barbiturates instead, or that there is any real difficulty in withdrawing the barbiturates once the alcohol or morphia has been got rid of.

It occurs to me, from experience of the use of the barbiturates among what is admittedly the most difficult class of patient—namely the "nervous" and "psychopathic"—that there are certain a priori considerations against the frequent likelihood of addiction.

(*a*) In the great majority of instances the barbiturates produce nothing resembling the euphoria of alcohol or morphine.

(*b*) On the contrary, patients sometimes complain of discomfort following their use—this being one of their disadvantages and one of the reasons why so many variants have been introduced.

(*c*) There is however in some cases some relief of anxiety. But when one prescribes the barbiturates for this effect, one finds that it is usually insufficient and often it is difficult to repeat if repetition is attempted at close intervals.

(*d*) Withdrawal of the barbiturates is not accompanied by the distressing subjective results and objective manifestations that accompany withdrawal of alcohol or morphine.

Another point which tends not to be mentioned in statements appearing in the medical and other press of this country is that when addiction does occur it is in so-called "psychopathic" patients as a rule—i.e., in the definitely predisposed. This is apparent in the foreign literature. When such a person ultimately takes an overdose it is merely illogical to attribute this to the use of the drug and not to the instability which made him desire oblivion and death.

Furthermore, if the barbiturates are frequently drugs of addiction and if addiction frequently leads to suicide, why are suicides for this group returned as averaging only 13 per annum in the past six years?

ORGANIC CHANGES IN THE CENTRAL NERVOUS SYSTEM

Mott, Woodhouse, and Pickworth[105] described mucinoid deposits in the central nervous system of cats which had been given large doses of veronal and which had been subsequently killed. The changes were accepted by Willcox[67] as an additional proof of the toxicity of the barbiturates. But as Craig[106] pointed out, the cats in question received a quantity of veronal which, making allowances for body-weight, was the equivalent of supplying veronal to a man at 500 grains per night. Even allowing for the greater resistance of cats to these substances the experiment hardly seems to form a satisfactory parallel. In any case it has been shown that the mucinoid deposits described exist in the central nervous system of control cats who have never had veronal.[107] "The material appeared with equal frequency in the brains of the control and of the sulphonal-treated animals. It may be concluded therefore that the material is a pathological lesion of laboratory animals not associated with any experimental procedure" (Polson). The changes described are therefore without significance for this problem.

DAUERNARKOSE

In treatment by *Dauernarkose* which has been very much more used on the continent than here and which aims at the production of continuous sleep for periods ranging up to a fortnight or more, the barbiturates have been selected as specially useful. Naturally it is necessary in this method to use sometimes much larger doses than for ordinary therapeutic purposes. For example, dial up to grs. 12 in the 24 hours has been used and the average in a recent paper from the Cardiff Mental Hospital has been 5–8 c.cm. somnifen in 24 hours intramuscularly.

Up to 1925 Müller had collected 311 cases from the literature treated by this method with 15 deaths. The analogy is somewhat with the mortality from major operations in which the technique was as yet imperfect. Since then the technique has been improved and the last paper on the subject in this country, by Ström-Olsen,[108] shows a series of 40 cases treated without untoward event.

In the review summarised in Tables I. and II. the libraries used have been those of the Royal Society of Medicine, the British Museum, the Royal College of Physicians of London, the Royal College of Surgeons of England, the University of London, and the British Medical Association.

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SUPPURATION IN A CLOSED FRACTURE OF THE CLAVICLE

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Acute osteomyelitis is commonly considered to be the outcome of two factors—namely, the presence of infective organisms in the blood combined with damage to the bone. A bacteræmia as an ætiological factor in any one case is clearly not possible of proof, but it is the only reasonable explanation of the fact that organisms come to settle in a bone, and it must be assumed to have been present even in those numerous cases in which there is no obvious primary lesion from which the organisms may have come. It has been shown that under certain circumstances infective organisms may be detected in the blood stream without there being any associated rise of temperature or other sign, and also that their presence in the blood may be extremely fleeting.[1] It is possible that a transitory bacteræmia is fairly common, and that in the great majority of cases there are no physical signs. In a few cases, however, some second factor is introduced which results in the development of acute infection of bone, and this additional factor is commonly assumed to be damage to the bone. It is thought that a local hæmatoma or area of damaged bone, of microscopic size, forms a suitable resting-place for circulating organisms, which there develop and invade the neighbouring tissues. An account of some slight preceding injury is often obtained in cases of acute osteomyelitis, but falls and tumbles form so constant a feature of the lives of children that much reliance cannot be placed on such histories. Nevertheless, some cases of osteomyelitis have been observed to follow on injuries which have been under treatment from the first. The injury most liable to be followed by acute inflammation of the bone appears to be a strain just proximal to the epiphyseal line.

Yet there are certain facts which make it difficult to believe that the pathology of acute osteomyelitis is as simple as is supposed. It is not apparent why the grosser lesions of the epiphysis, such as partial or complete separation, are so rarely followed by acute osteomyelitis, for it is not unreasonable to suppose that violence sufficient to cause a separation of the epiphysis must produce some slight strain on the bone immediately proximal to it. Lawford Knaggs, writing in "The Inflammatory and Toxic Diseases of Bone," refers to one such case only.[2] It is perhaps even more difficult to understand on the same assumption why closed fractures are so rarely infected by the blood stream, for it must from time to time happen that a child in whom all the factors are present which in association with a juxta-epiphyseal strain are supposed to lead to acute osteomyelitis, sustains a fracture. Yet infection of a fracture without a wound of the skin is extremely rare. It is the purpose of this paper to place on record a case of infection in a closed fracture of the clavicle.

A child aged ten months was treated at the Metropolitan Hospital for a fracture of the right clavicle. The fracture was a complete one. Progress was perfectly normal. Nine months later the child was again brought to the hospital on account of a swelling over the same clavicle. It had been noticed for four days; there was no known injury. The swelling was stated to be increasing in size. The child looked ill and had a temperature of 101° F. Over the right clavicle there was a red tender fluctuating swelling, about 1½ inches in diameter, attached to the bone. There was no scratch or bruising of the skin. A radiogram showed a recent fracture through the callus of the old fracture. The swelling was in immediate relation to the fracture. The abscess was incised: in the depth of the wound bare bone was palpable. Streptococci were cultured from the pus. The wound healed rapidly without any sequestration of bone; there was no delay in the union of the fragments.

It is possible that the infection was conveyed to the fracture through the skin, but the appearances did not suggest this. The assumption that the infection was blood-borne could be made with more confidence if suppuration developed round a fracture more deeply seated than the clavicle. This complication of a closed fracture seems to be extremely rare. There is no record of such a case in the surgical registrar's reports at University College Hospital for the last 20 years, nor is the possibility of suppuration without an open wound mentioned in the standard text-books on fractures. It may or may not be significant that in the case reported here the fracture was not through normal bone but through the callus of an old fracture.

[1] Barrington, F. J. F., and Wright, H. D.: Jour. Path. and Bact., 1930, xxxiii., 871.
[2] Knaggs, R. L.: The Inflammatory and Toxic Diseases of Bone, Bristol, 1926.

A CASE OF MYELOMA

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According to Shattock [1] the term myeloma includes the benign giant-celled tumour of osteoclasts and the true giant-celled sarcoma. R. P. Rowlands [2] on the other hand, uses it to designate an innocent tumour composed of multinucleated giant cells embedded in spindle and round cells. He gives an account of four personal cases, three of which he treated by opening

FIG. 1.—Radiographic appearances before operation, showing myeloma at lower end of femur.

FIG. 2.—Eight months after operation.

into the bone, scraping out the growth and then applying an antiseptic to the cavity; he closed the wound completely, letting the cavity fill with blood. Spontaneous ossification took place with restoration of function.

Ewing,[3] according to the usual American terminology, calls these tumours osteoclastomata. He gives a historical survey of knowledge of them and

states that although several observers had previously emphasised the benign character of myelomata, most were regarded as malignant until Bloodgood in 1910 insisted that they were not. Later, in 1919, he published 47 cases treated by curettage without recurrence.

Platt [4] says that myeloma is rather more frequently found in females than in males and the usual age of the patients at the onset is between 20–35 years. They arise in the epiphysis, probably underneath the epiphyseal cartilage, and are most often seen in the lower end of the femur, upper end of the tibia, and the lower end of the radius. Spontaneous

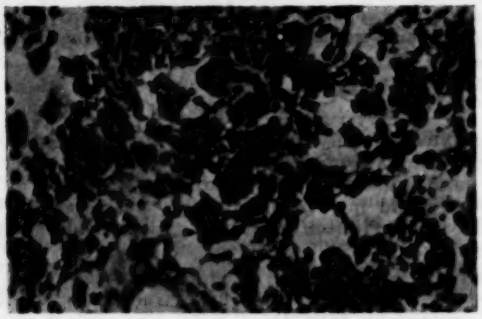

FIG. 3.—Photomicrograph (× 200) showing the typical giant-celled system.

fracture is said to occur in about 13 per cent. He considers that the best treatment is to thoroughly curette the growth, cauterise the walls of the cavity with pure carbolic acid, and then to apply alcohol; although amputation may be necessary in advanced cases with spontaneous fracture. The vast majority of these tumours, he believes, are benign, but there are undoubted cases in which they have produced secondary deposits in the lungs with typical giant-celled formation.

The following case, which came under my care at the Manchester Victoria Memorial Jewish Hospital, illustrates the essential features of the disease.

The patient, a man aged 28, seen by me in April, 1932, gave the following history. From December of the previous year he had felt a gnawing pain and aching in the region of his left knee. At first this seemed to be chiefly below the joint level but as it got gradually worse the pain was centred more round the upper part of the knee. For the last two months the knee often used to give way, causing a sickening pain. At length the pain was so bad that the man could not stand.

Examination showed some limitation of movement of the joint and a slight expansion above the external condyle of the femur. Radiography showed that the external condyle of the femur and the region immediately above was expanded by a tumour, and this, combined with the mottled appearance, suggested the diagnosis of myeloma.

An operation was performed on May 11th, 1932, when an external incision was made and the thin shell of bone overlying the tumour incised. The material, which was soft maroon-coloured substance, typical of myeloma tissue, was curetted away with a large spoon; the walls of the cavity were then scraped very thoroughly and the whole swabbed out with spirit and then 1/1000 solution of perchloride of mercury. It was found that the cartilage, covering the external condyle, had been perforated at one spot and so the cavity in the femur communicated with the knee-joint. The wound was then closed without drainage. In about three weeks' time the knee was enclosed in a plaster-of-Paris splint and in about three months after the plaster had been removed, a walking calliper was provided on which the man was able to get about freely. In a further six months walking was permitted, and at the present date the man walks freely although he still prefers to use his calliper when he is working as he is afraid to put too much weight on his leg.

As seen with X rays there is now a large amount of new bone-formation which leaves no special weakness of the knee-joint. This joint shows a full range of extension but flexion is limited by some 45 degrees.

This case is reported because myeloma is comparatively rare—Stewart [5] found that the average frequency was about one case per annum in each of the larger general hospitals of the country—and also to record the rapid restoration of function following thorough curettage.

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SARCOMA OF THIGH MUSCLES TREATED CONSERVATIVELY

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A RETIRED labourer, aged 69, was sent up to me for admission by Dr. Horace Potts, of Great Yarmouth, with a diagnosis of sarcoma. He was admitted to hospital on Nov. 24th, 1931.

History.—He gave a history of having noticed a lump in his thigh for six weeks after a recent injury. The swelling had been punctured without result; no fluid withdrawn.

On examination there was a resilient mass the size of a cricket ball attached to and probably growing from his adductor muscles rather more than half-way down the left thigh. The patient was tall and spare, and for his years appeared in good health. No glands in groin. No sign of disease in abdomen or chest.

I decided to remove the tumour locally and planned the operation to be described.

Operation (Nov. 27th, 1931).—I first incised the tumour to confirm diagnosis and found what appeared to be fairly soft sarcomatous growth. I then closed the wound by transfixing the skin near the edges of the incision and so inverting the skin edges and completely shutting in the growth. After making a fresh toilet of the skin and my hands, I exposed the femoral vessels and doubly ligatured and divided the deep femoral trunk. Dividing the artery was, I now think, unnecessary and undesirable, for I encountered rather serious hæmorrhage, presumably from wounding the deep femoral vein beyond the artery. As soon as this was controlled I made an incision in the line of the groin as far as the pubes and carried down on the inner front of thigh to the inner side of knee, removing a generous ellipse of skin over the tumour. I dissected back the skin flaps from the underlying adductor muscles, and when they were well exposed above and below and to the outer side of and behind the tumour I detached them from their various attachments and removed the adductor muscles, tumour, and overlying skin and subcutaneous tissues in one mass. Bleeding was quite insignificant and the patient did not suffer much shock. The wound healed for the most part by first intention, but the patient gradually became somewhat disordered mentally and dirty in his habits. He was discharged at his family's request on Jan. 24th, 1932. On returning home he soon recovered his mental balance.

The *pathological report*, by Dr. David Brough, was as follows:—

"Histologically this tumour is a mixed-celled sarcoma, though in parts it consists of pure spindle-celled tissue, some of it very cellular with considerable irregularity of both cells and nuclei. Some areas of the tumour show extreme cellular and nuclear heteromorphism with numerous malignant giant cells, both mono- and multinucleated, and many mitotic figures. In places there is early necrotic change, and in relation thereto many of the

cells have assumed foamy characters. This includes numerous giant cells many of them of non-malignant aspect, but probably of neoplastic origin. A characteristic appearance in some of these cells is a ring of small deeply stained nuclei. In some instances the resemblance to a tuberculous giant cell is fairly close, but there are no osteoclast-like giant cells. Certain parts of the tumour are infiltrated by lymphocytes and neutrophil polymorphs and several small areas are overrun by eosinophil cells. Blood-vessels are fairly numerous, but very badly formed, many of them being merely endothelial-lined clefts. Diagnosis: a fibrosarcoma partly of spindle-celled, partly of mixed-celled type with numerous malignant giant cells. Infiltration by lymphocytes, polymorphs, and eosinophil cells."

In December, 1933, more than two years after his operation, I saw and examined the patient. He looked extremely fit and could walk at least three miles at a stretch. He carried himself well. He was much fatter and was bright and alert. There was no sign of local recurrence and no symptoms or suggestion from his looks that he had any visceral disease. There was now remarkably little deformity of his thigh, and he has quite a surprisingly well-shaped limb. I think that with a sarcoma one can take quite a hopeful view of his future expectation of life, and can claim that the operation described gave him a better chance of recovery than a formal high amputation and as good a chance as an amputation modified by removal of adductor muscles. I was agreeably surprised at the hæmostasis obtained by ligation of the deep femoral, but feel that ligature in continuity would be the correct technique.

MEDICAL SOCIETIES

ASSOCIATION OF CLINICAL PATHOLOGISTS

THE seventh annual meeting was held in the inoculation department, St. Mary's Hospital, London, on Jan. 27th. Prof. A. FLEMING occupied the chair.

The first part of the meeting was devoted to a consideration of

Prognosis and Treatment in Meningitis

other than that due to tuberculous or meningococcal infection. In opening the discussion Dr. S. C. DYKE (Wolverhampton) commented on the differences in opinion as to the gravity of the outlook in meningitis of pneumo-, staphylo-, or streptococcal origin. His own experience had been that the isolation of any of these organisms from the cerebro-spinal fluid indicated a fatal issue. The records of the Royal Hospital, Wolverhampton, for the past four years showed 27 cases of meningitis, all fatal, in which Gram-positive cocci had been isolated from the cerebro-spinal fluid (pneumococci, 18 cases; streptococci, 6 cases; staphylococci, 3 cases). He had frequently been told of cases of recovery from bacteriologically proven infection by these organisms. A questionnaire had been issued to all members on the subject and the cases to be reported in the discussion to follow represented the response. Dr. Dyke himself had experience of only one case of meningitis, other than meningococcal, in which recovery had ensued after the isolation of organisms from the C.S.F. In this case the infecting organism was a hæmophilic bacillus of the Pfeiffer type in a man of 22; the acute illness, which was characterised by intense headache, high temperature, and bradycardia, lasted for two weeks, lumbar puncture being performed 12 times in 16 days.

Dr. J. HARWOOD LITTLE (Chichester) reported another case in which recovery had ensued after isolation of bacilli of Pfeiffer type from the C.S.F. The patient was a boy of 8. The source of infection was apparently the ear. The duration of the symptoms was one week only, and the bacillus in question was isolated the only time lumbar puncture was performed.

Dr. CUTHBERT DUKES (London) gave brief notes of a case already reported in which hæmolytic streptococci had been recovered from the C.S.F. The patient was a man of 45 and infection was apparently from an acute pharyngitis. The C.S.F. showed numerous streptococci in stained films but cells to the extent of only 700 per c.mm. The streptococci proved to be hæmolytic and one week from the time of onset antiscarlatinal antitoxin was injected intrathecally and intravenously; this was repeated the following day, after which the patient made a rapid recovery.

Dr. G. W. GOODHART (London) sent the report of one case in which recovery had ensued after isolation of streptococci from the C.S.F. The patient was a girl of 16. Infection was apparently aural in origin. The duration of the illness was about 16 days and lumbar puncture was performed four times.

Dr. ELIZABETH O'FLYNN (London) reported a case of meningitis at first apparently due to a pure meningococcal infection. The fluid had been sent for typing to Dr. W. M. Scott, who had identified the meningococcus as belonging to Type II. and had also succeeded in isolating a hæmolytic streptococcus. As there was no chance of the fluid having become contaminated with this organism this apparently represented a double infection. Recovery followed.

Dr. A. G. SHERA (Eastbourne) reported recovery of a case of fracture of the skull involving the ethmoids in which meningitis had resulted and *Streptococcus viridans* had been isolated from the cerebro-spinal fluid.

Dr. F. B. SMITH (Preston) reported a case in which hæmolytic streptococci, of otitic origin, had been isolated from the C.S.F.; serum was given and recovery ensued.

Dr. D. S. MURRAY (Richmond) reported a case in which thick pus giving *Staphylococcus aureus* on culture had been obtained on lumbar puncture. There was doubt whether the pus might not have been of epidural origin. Antistaphylococcal serum was given and recovery ensued.

Dr. I. B. MORRIS (London) reported recovery in a case of a man of 21 in whom *Staphylococcus albus* was isolated both from the blood and on culture of the C.S.F., which showed 9000 cells, nearly all polymorphs, per c.mm.

Dr. J. G. GREENFIELD (London) referred to cases in which pus might be recovered on lumbar puncture not from the theca but from the epidural space. In such cases repetition of the puncture carried with it the danger of infecting the meninges.

Dr. D. EMBLETON (London) put in a plea for frequently repeated puncture in all cases of meningitis. He did not consider every six hours too frequent.—Dr. GREENFIELD referred to drainage of

the theca by an indwelling lumbar puncture needle cut off and bent over a perforated metal plate.

Dr. DYKE pointed out that the evidence brought forward went to show that isolation of Gram-positive cocci from the C.S.F. in cases of meningitis, although it rendered the prognosis extremely grave, evidently did not justify the abandonment of all hope.

Short Communications

Dr. R. MAEGRAITH (Oxford) described a precipitin reaction for the diagnosis of cerebro-spinal fever. The reaction was brought about by placing in Dreyer's tubes small amounts of cerebro-spinal fluid as antigen and a suitable antimeningococcal serum as antibody. A positive reaction was shown by the appearance of a white precipitation ring at the juncture of the two fluids. The reaction became positive within the first few hours after the onset of symptoms and constituted a valuable aid to early diagnosis.

Prof. G. S. WILSON spoke of the diagnosis of *Brucella abortus* infections. He stated that abortus infection in this country is practically always due to the bovine type which in primary culture requires an atmosphere of 10 per cent. CO_2. He pointed out that the bovine type has high infectivity but low pathogenicity; many persons whose work brought them in contact with cattle developed serum agglutinins against the organism without ever having had symptoms of the disease. The mere demonstration of agglutinins in the serum was therefore not proof of the existence of the disease. For diagnosis either a high agglutinin titre or characteristic symptoms were required. In persons not exposed to infection a diagnosis might be permissible on a low agglutinin titre, but in those exposed to infection this was not permissible unless the clinical picture was typical. Blood culture formed a valuable method of diagnosis; the est bculture medium was 1 per cent. glucose broth and incubation should be prolonged in an atmosphere of 10 per cent. CO_2.

Dr. H. J. PARISH (London) spoke of staphylococcal toxin and toxoid with special reference to the use of the latter as an immunising agent. He pointed out that the antistaphylococcal hæmolysin titre of the serum rises pari passu with the antitoxin value. He showed that both in men and animals the antihæmolysin titre could be greatly increased by injections of toxoid and described a simple technique for the estimation of the antihæmolysin titre of the serum. He drew particular attention to the value of this procedure as a means of estimating the response to immuno-therapy, either passive by means of serum or active by means of toxoid.

Dr. E. L. STURDEE (London) detailed the results of a statistical inquiry into the therapeutic effect of antimeningococcal serum. Reliable controls were extremely difficult to secure, but his evidence went to show that by the use of serum the mortality-rate was reduced by from 20 to 30 per cent.

Dr. W. M. SCOTT (London) pointed out that the type of meningococcus predominant in the present epidemic area is I.–III. in opposition to the state of affairs in the epidemic period 1915–19, when the II.–IV. type was mainly met with.

Dr. R. A. O'BRIEN (London) spoke of the debt which those concerned with the manufacture of therapeutic serum owed to the work of the medical officers of the Ministry of Health. He deplored the absence of any reliable test for the therapeutic efficiency of antimeningococcal serum; the agglutinin titre he regarded as a very doubtful criterion of therapeutic value.

ROYAL SOCIETY OF MEDICINE

SECTION OF ORTHOPÆDICS AND SECTION OF SURGERY

A JOINT meeting of these sections on Feb. 6th, held at the Royal College of Surgeons of England, with Mr. ST. J. D. BUXTON, president of the section of orthopædics in the chair, was devoted to a discussion on

Fibrocystic Disease of Bone

Mr. R. C. ELMSLIE described the pathological changes found in the various types of case loosely called osteitis fibrosa, or fibrocystic disease of bone. These changes, very similar in all the types, were summarised as lacunar absorption of bone by osteoclasts, deposit of bone of an irregular texture (woven bone), fibrosis of the marrow, formation of cysts and of osteoclastomata, and development of cartilage. That different forms of osteitis produced the same type of histological change might be explained rather by the identity of the complex tissue (bone) involved in the process than by a common cause.

Mr. Elmslie briefly described six different types of bone change to which the name osteitis fibrosa was commonly applied; they were classified under the following headings: (1) simple bone cyst; (2) osteoclastomata; (3) osteoclastomatous cyst; (4) diffuse fibrosa of bone; (5) generalised diffuse fibrosa of bone; and (6) hyperparathyroidism. The simple cyst often showed fibrosis of the marrow of the surrounding bone. The absorption was brought about by osteoclasts and there might be no sharp delimination by a lining membrane. A cyst as shown in a radiogram might be an osteoclastoma converted into a cyst by curettage. Where the wall of a cyst contained a small amount of active giant-celled tissue it was termed an osteoclastomatous cyst. Calcium deposits and areas of cartilage in the walls of these cysts were not uncommon, and the differentiation of such cysts from degenerating chondromata presented considerable difficulty. Mr. Elmslie showed by numerous examples that the clinical diagnosis of tumours and cysts of bone which gave rise to expansion was most often guesswork. Exploratory operation alone was reliable; and by means of it, cases suspected of being simple cysts or osteoclastomata had been recognised as sarcomata, myxomata, chondromata, or abscesses.

The X ray appearances in cases of diffuse fibrosis of bone often suggested cyst, and there might, in fact, be cysts formed in the fibrous tissue; but these were probably evidence only of degeneration. The characteristic process was a localised replacement of the bone and marrow by spreading fibrous tissue, expanding and deforming the bone. In the fibrous tissue, spicules of bone occurred. The generalised form had a similar histology, but affected several bones. It was a disease distinct from hyperparathyroidism; and the blood-calcium level was not disturbed. Five cases had been studied by Mr. Elmslie, and in one the disease was unilateral. Exploration for parathyroid tumour had been carried out in one case with negative findings. The changes in the skull (porosis and thickening) typical of hyperparathyroidism were not found. Mr. Elmslie appealed for the segregation into groups of these various conditions, and for the disappearance of the term osteitis fibrosa.

Mr. H. JACKSON BURROWS described the effect of experimental occlusion of blood-vessels on the bone and marrow. The vessels had been obstructed by a variety of methods, and sections were thrown on the screen contrasting the bone of the normal and

abnormal limbs, and showing that the result of the occlusion might be death of the bone, fibrosis of the marrow, or a combination of both these processes.

Mr. R. DAVIES-COLLEY said that the main cause of the confusion in nomenclature had been the grouping under one heading of the single and generalised forms of fibrocystic disease: the term fibrocystic disease should be restricted to the generalised form, in which hormonic or metabolic influences were at work. He thought the history of trauma was the most significant factor in the single cyst. Histological examination distinguished two types of disease—in one there was an abundance of fibrous tissue, often with an admixture of bone; in the other, there was an osteoclastomic process, with the formation of a cyst or of a polycystic mass, and giant cells were present in great numbers. The cystic forms were slower in growth, but all were essentially of the same nature, and the cystic element was purely secondary. There was no evidence to support the view that the osteoclastoma in particular arose in the epiphysis. Where the epiphysis was not affected in other forms of the disease, this was to be explained by a protective local reaction.

Mr. H. A. T. FAIRBANK contributed a description of three cases of generalised osteitis fibrosa in which the disease was definitely confined to one side of the body. In none of these cases was hyperparathyroidism a factor. Mr. Fairbank also gave an account of a case of localised osteitis limited to the cancellous tissue at the lower end of the humerus in a young boy. There was a history of trauma, and although the disease was not sharply demarcated, curettage had so far given a satisfactory result. The boy was now playing football.

Mr. HERMON TAYLOR traced the relationship between the biochemical and histological processes involved in hyperparathyroidism. One phenomenon only was directly attributable to the action of the parathyroid hormone and that was the high level of the serum calcium; the other processes observed were secondary. The increased excretion of phosphorus was a direct result of the increased excretion of calcium, calcium being excreted in combination with phosphorus. The rise in the phosphatase of the blood was evidence of the increased laying-down of calcium, phosphatase being essential to the conversion of ionised non-organic calcium into the non-ionised organic form. And finally, the histological changes in the marrow were a result of the toxic action of the excess calcium on the endothelium of the blood-vessels. The process had been followed in a rabbit treated with parathormone. This rabbit responded to parathormone at first by a marked output of calcium. A stage of compensation followed, characterised by a process of recalcification. A rib was removed (during each stage) and the output of calcium measured throughout the experiment. In the first stage the bone showed much decalcification and hæmorrhage into the marrow, but no fibrosis. The healing rib removed during the phase of compensation showed recalcification, fibrous tissue, and typical giant cells. The hæmorrhage was a direct result of the excess calcium, whilst the fibrosis and giant cells were a reaction to the hæmorrhage. Hyperparathyroidism was, therefore, a disease characterised by typical radiological appearances in the bones, by the biochemical changes of hypercalcæmia and probably of excess calcium excretion in the urine, and by the histological appearance of fibrosis of the bone-marrow.

Dr. JOHN BEATTIE described two phases in the life of bone; in the first stage the changes were under the control of the anterior pituitary, whilst in the second stage they were under the influence of vitamins. Cartilage proliferation depended on the action of vitamin A; calcification on the action of vitamin D. It had been shown by animal experiment that doses of vitamin D, given over a long period, might produce a condition very like Paget's disease (osteitis deformans). If parathormone were given by repeated injection over a long period, the original osteoclastic reaction gave place to an osteoblastic reaction.

Dr. G. E. VILVANDRÉ showed a radiogram of the chest in a case of generalised osteitis fibrosa. There was evidently a mediastinal tumour, which was removed by operation and proved on histological examination to be a true parathyroid tumour.

The CHAIRMAN referred to the valuable exhibit of museum specimens which Mr. Burrows had collected from all over London.

SECTIONS OF OPHTHALMOLOGY AND DERMATOLOGY

AT a joint meeting of these sections on Feb. 9th, Mr. A. C. HUDSON (ophthalmology) being in the chair, a discussion took place on

Conditions Common to Ophthalmic and Dermatological Practice

Mr. J. H. DOGGART said that many of the patients attending ophthalmic clinics were really skin cases, notably some of the varieties of blepharitis, and a number of diseases in general medicine implicated both the skin and the eyes—for example, measles and thyroid deficiency. Moreover the eyeballs needed the protection of the eyelids, which were covered by facial skin. He would confine his remarks to blepharitis and rosacea.

Blepharitis might be of any grade of severity. Its onset was mostly due to some variety of conjunctivitis or of facial dermatitis, but if neglected or improperly treated could persist by itself. The longer blepharitis endured the more it approached the ulcerative form, a stage characterised by scantiness and irregular growth of eyelashes. Many of these cases were aggravated by over-treatment. All strong solutions must be avoided; normal saline was as good as most things. The use of lotion should be limited to thrice daily. Petroleum jelly or weak boric ointment might be applied to the lid margins before sleep, and perhaps during the day. Though the ætiological importance of refractive errors had been exaggerated, it was advisable to test refraction in persistent cases of blepharitis and to correct errors. Eyestrain could exert a considerable indirect effect by prompting the patient to rub his eyes.

Rosacea.—In the lay mind this condition was linked up with alcoholic indulgence, but abstinence was no guarantee against rhinophyma. As to causation, many patients suffered from indigestion and other troubles, though others seemed healthy and happy. Rosacea keratitis was an obstinate disease, with a tendency to relapse. Most cases developed, at some time, a mild blepharitis, not associated with distortion of the lid margins, but predisposing to the formation of meibomian cysts. There might be a thinning or even perforation of the cornea. The course of the disease was often irregular, and long spontaneous remissions might occur, and the value of treatment was therefore difficult to estimate. The severity of attacks might diminish with age, but meantime the cornea might have been rendered almost or quite opaque.

Dr. H. C. SEMON said that rosacea had been ascribed to so many different predisposing conditions that the only way to reconcile the interaction of such diverse

factors was to predicate nervous disturbances at the periphery of a kind of reflex arc in the sympathetic nervous system. The flushings suggested the intervention or association of angioneurotic factors. The abnormal stimuli ultimately led to chronic stasis and congestion, which the capillariscope showed, as was most pronounced in the small vessels of the upper horizontal network in the cutis, associated with a spasmodic constriction of the capillaries in the papillary body. This congestive state led to disturbances of secretion and predisposed to infection of the sebaceous glands, and at this point the symptoms of rosacea became apparent, with the possible end-result rhinophyma. The idea he had submitted was further supported by the fact that the symptoms were aggravated by emotion, heat and cold, and light. Carefully graduated doses of X rays had a beneficial effect, perhaps largely by inhibiting the excessive sebaceous activity. A seborrhœic subject was especially liable to rosacea. Most cases of rosacea were soon relieved, if not permanently cured, by dietetic means. His own practice was to give carbonate of magnesia and bismuth, with or without a little bromide and valerian in emotional cases, for a week or two before starting with hydrochloric acid. These patients must rigidly abstain from alcohol, and also from coffee and strong tea, which he regarded as a far more important causative factor than alcohol. Condiments and pickles must be taken only sparingly, drinks were best taken cold or tepid. All septic foci must be dealt with, as also must constipation. Local applications containing ichthyol and lead (1 per cent.) in calamine lotion were valuable in acute or irritable cases. For the more chronic varieties he favoured sulphur and resorcin. Resistant cases and those in which a seborrhœic element was pronounced were usually benefited by carefully graded doses of X rays.

Dermatitis of eyelids might be primary or secondary in origin. Most of the primary cases resulted from an irritant—i.e., the antigen reacting in a delicate epidermal structure, or in a predisposed person. The eyelids were very delicate structures, and were frequently the first to show signs of irritation to exogenous irritants—e.g., a hair-dye, or plants, powders, scents, or the vapour of formic or osmic acid, to which a patient might be peculiarly sensitive. There seemed to be few circulating or endogenous causes. Most bacterial cases were secondary to some such condition as seborrhœa. Once acquired, the allergy of the individual might be extreme. Infections of the scalp and of the face were often associated with a marginal blepharitis, and he believed that the degree of eyelash destruction present in any case of chronic seborrhœic dermatitis was an index of the severity of the infection, and hence a guide to the ultimate prognosis. In seborrhœa and its manifold complications one was dealing with a tendency or diathesis; therefore treatment must be persistent. Few well-established chronic cases were really cured. Of local remedies, sulphur remained the best, but it must not be used in a concentrated form, and signs of irritation must be watched for. Resorcin and salicylic acid were good substitutes. Sulphur spas were suitable for patients able to use them. In the flexures, where moisture predominated, a paste of starch, vaseline, lanoline, and so on could be used as the parts became drier.

Mr. R. AFFLECK GREEVES said that the ocular lesions of acne rosacea resembled those of phlyctenular disease. Corneal lesions were commonest, and when ulcers formed were very resistant to treatment. An appreciable scar might be left after healing and might seriously affect the sight if central in position. Another form of the disease began as an infiltration of the corneo-scleral junction. Lesions like those in phlyctenular disease responded best to stimulation—e.g., yellow oxide of mercury ointment, and atropine to relieve the pain of photophobia. He was against carbolising the ulcers. In his experience the greatest relief was afforded by X ray applications in doses of from one-sixth to one-third of a Sabouraud pastille not more often than once a fortnight. Early application of the rays might cause a recent infiltrate to disappear and there was no reaction to such a small dose.

Dr. SYBIL EASTWOOD said in 95 per cent. of the cases of rosacea in the skin department of University College Hospital there was some digestive disturbance. In long-standing rosacea the underlying factor had been found to be a vascular congestion, in most cases arising from the stomach. Forty-eight per cent. of the cases either had achlorhydria or the quantity of hydrochloric acid was very low. The results obtained in rosacea after getting treatment of the stomach were good. The most promising cases were those with a low hydrochloric acid secretion, for administration of acid got them and kept them well, or with only mild recurrences. The stomach condition should be investigated in every case.

Dr. S. H. BROWNING said that many cases of seborrhœa were sent to him for bacteriological examination, and in a large proportion he found seborrhœa of the scalp, or pityriasis capitis, the treatment of which produced good results. Most of the blepharitis he saw was staphylococcal, usually *S. aureus*, sometimes *S. albus*. Vaccines were a useful adjunct to other forms of treatment. Styes might be unassociated with any other staphylococcal condition, and ordinary treatment usually sufficed. Shortly there would be produced an antistaphylococcal serum suitable for acute cases; at present only chronic cases could be treated by a vaccine. Sometimes, with potassium tellurite staining, styes could be shown to contain streptococci. Boils often yielded to large doses of hydrochloric acid, with plenty of water.

Mr. EUGENE WOOLF said he was not aware that there was any difference between the sympathetic supply to the cornea and the vascular plexus above and below, and he thought that in acne rosacea lesions exposure might play a part in causation.

Mr. J. FOSTER described an attempt to graft in the orbit which did not take a week after exposure to radium, but took after six weeks' delay.

Mr. COLE MARSHALL related a case of acute dermatitis of the lids due to extreme sensitiveness to primula, the nature of which was for a long time unsuspected.

Mr. B. W. RYCROFT showed two cases of pemphigus of the conjunctiva, a very rare condition.

Dr. A. ROXBURGH said he had treated many cases of rosacea with X rays in small doses; all were improved, some cured. He had never seen any trace of damage to the lens.

Dr. A. J. DURDEN SMITH showed five cases to illustrate the results of treating keloid by radium, which was of most value when used early. No second exposure should be given until the full effect of the first had had time to develop. In keloid in the orbital region implanting radon seeds avoided the danger of post-radiation changes in the eye.

The PRESIDENT said it was not very rare to see burns and keloid-formation between the side of the nose and the inner part of the lower lid. He related a case in which radium softened the keloid. A skin flap had been brought down from the forehead, but

the keloid contracted, and the skin rolled up; but after radium was used the result was better than at one time it seemed reasonable to expect.

Mr. P. G. DOYNE showed a case of unusual coloration of the sclerotics. The patient, an actress, had noticed that her eyes had gradually been becoming blue; the bulbar conjunctiva was of a bluish colour. The slit-lamp showed a fine punctate deposit on the bulbar conjunctiva. The patient did not use a silver stick for make-up, but her grease paint had silver in it, and the condition might be argyrosis.

MEDICAL SOCIETY OF LONDON

AT a meeting of this society held on Feb. 12th, Sir JOHN THOMSON-WALKER, the president, occupying the chair, a discussion took place on the

Present Position of the Vaccination Question

Dr. C. KILLICK MILLARD, in opening, emphasised his strong belief in vaccination. Nothing which had happened in the last 30 years had in the least shaken his profound faith in the power of vaccination to confer protection of a specific nature on the individual against small-pox. But the protection so conferred was no more than temporary, even though it might last years, and the effect on the community was not nearly so well established as that on the individual. The reduction in small-pox mortality was not necessarily all due to vaccination; other potent contributory causes must be given due weight. In the period 1847–53, when vaccination was optional, the small-pox mortality was 305 per million persons; from 1854 to 1871, when vaccination was obligatory but inefficiently enforced, the figure was 223; while from 1872–80, when it was more strictly enforced by vaccination officers, the mortality was 156. At a still later date, from 1881–1900, there was a decrease in vaccination, owing to the organised opposition, and the figure fell to 30; from 1901 to 1910, after the conscience clause had been in operation, it fell still further to 13 per million, and in 1911–20 it was only 1 per million, and in the ten years ended 1930 it was ½ per million persons. These figures discounted any idea of a true relationship between the amount of infant vaccination and the mortality from small-pox. In India, a country with a very backward sanitation, in spite of vaccination small-pox still continued to take a colossal toll of life. He did not doubt that during the Great War vaccination prevented the spread of small-pox among the armies, but this was a merit of recent, not infant, vaccination. In the post-war period, Dr. Millard contended, the whole situation had radically changed. Variola major, or Asiatic small-pox, had largely disappeared from among us, and its place had been taken by a trivial form, variola minor, which was not fatal nor permanently disfiguring, and was practically free from grave sequelæ. He thought the profession was now agreed that variola minor was a separate entity, and that it bred true. To attempt to apply the same preventive measures to this mild disease as to the major disease tended to bring preventive medicine into contempt. The Ministry of Health had now stated that they did not expect the same measures to be taken with these two diseases. It was important to settle whether protection against variola major could be conferred by variola minor, and, if so, in what degree; because the substitution of injections of variola minor for ordinary vaccination might give more lasting immunity. Under the name alastrim, variola minor had been known from time immemorial.

The second factor which had arisen to modify the present position was the recognition of post-vaccinal encephalitis though only a small number of cases had been recorded. It rarely occurred under one year of age, the usual time of the preliminary vaccination, and was rare after revaccination; but there seemed to be a special danger in the wholesale vaccination of unvaccinated contacts, especially between the ages of 5 and 15. In Bristol, in 1927, in a vaccination campaign, 9000 children were vaccinated or revaccinated, and seven cases of post-vaccinal encephalitis occurred. The Rolleston committee, reporting in 1928, regarded the disease as of serious import, and in their second report, in 1930, it was stated that although no particular lymph could be incriminated it was clearly the vaccinia virus which initiated the nervous disturbance.

Dr. Millard concluded by stating that, in spite of the steadily diminishing neglect of vaccination, variola major had been virtually banished from these islands for about thirty years, although there had been several importations of the disease in conditions favourable to its spread. It would be difficult to-day to make out a case for compulsory infant vaccination before an impartial tribunal merely on the grounds of protection against variola major; while variola minor was such a trivial disease that it would be hard to justify that compulsory measure. In 1932 both the Society of Medical Officers of Health and the Association of County Medical Officers of Health had resolved that the desirability of substituting a voluntary system of infant vaccination for the present compulsory system ought to be considered; though a similar resolution submitted to the British Medical Association last year failed to pass.

Sir GEORGE BUCHANAN exhibited a large chart showing the incidence of variola major in the British Isles over some ten years, and embracing about 30,000 cases. The highest peaks were in 1926–27. He agreed that the minor type of the disease had been breeding true, and that it was entitled to a separate name from Asiatic small-pox. There could be no doubt about the protective value of vaccination, though admittedly the period of such protection was limited to a few years. He did not attach the same preventive importance as Dr. Millard did to ordinary measures of sanitation unless administrative measures and isolation were included in the term. Whether compulsion was continued or not, there should be preserved every facility for people of all ages to undergo vaccination, and every encouragement to be vaccinated for those intending to travel or reside abroad. Legislation on the subject of small-pox was now overdue. Voluntary vaccination little and often seemed to him to be the wise thing.

Dr. J. P. MARSDEN admitted that compulsory vaccination as applied in this country was a failure. There were several reasons, however, why the option should not be left with the individual, a strong one being that the mass of the people were notoriously lax about their protection against small-pox. The public were quick to seize upon the Rolleston committee's suggestion that one puncture instead of three or four should suffice, but it had not been established that one puncture was equally efficacious. Encephalomyelitis was not associated with small-pox alone, so that its abolition would not necessarily follow that of compulsory vaccination. He regarded variola minor as a modification of variola major; differential diagnosis between them was not possible at first sight of the patient.

Dr. E. W. GOODALL expressed general agreement with Dr. Killick Millard. Variola minor was described

as occurring in the West Indies in 1875, under the name varioloid varicella, and protection against it was secured by ordinary vaccination. Even in an epidemic of old-fashioned small-pox some cases would be mild, but could communicate the disease in severe form to others. It was a fallacy to base conclusions only on mortality statistics. He did not agree that sanitary measures had much to do with the disappearance from this country of variola major, and as the latter was still rife in many countries with which English people were having constant intercourse, he was against the abolition of compulsion, though he would not push the compulsory clause too much. He agreed that vaccination regulations needed revision.

Dr. H. B. DODWELL said that the mass of the people were hostile towards compulsory vaccination; he strongly favoured the abolition of compulsion and the substitution of propaganda. In his own practice he had practically no refusals. He fully agreed that the child might have to be revaccinated. If the country were ever faced with the likelihood of a severe visitation, the situation would be altered and compulsory powers might be useful.

The PRESIDENT said that little emphasis had been laid on isolation. Early inoculators were successful largely, he contended, because they isolated their patients. He would like to hear what effect isolation had been found to have in checking small-pox. He asked what was the mortality of variola minor, how early it could be diagnosed, and how its spread could be prevented except by legislation. In general people evidently believed in vaccination, for whenever a number of cases of small-pox appeared there was a rush for vaccination.

Dr. MILLARD, in reply, was sure that the only way to allay the antivaccination movement was to abolish compulsion; it was this clause which kept the organisation against vaccination alive. It was safe to take the view that vaccination protected but only for a time. He agreed that unvaccinated contacts with variola major would be a danger to the community. The people had already found that there was a mild type of the disease, and in the north they had begun to speak of such cases as "pimple pox." He objected to the idea that variola minor was a modified form of variola major; it was, in his submission, a separate entity. At onset the major disease was so like the minor that it was difficult to differentiate them. At present there was no evidence that one ever reverted to the other. The need for compulsion no longer existed. The influence of general sanitation on the incidence of small-pox was not easy to prove, but in the term sanitation he certainly included registration and isolation. Overcrowding, poverty, and underfeeding had a definite influence for the bad in several zymotic diseases, and they might easily adversely affect the people in the face of small-pox. He believed that a large proportion of the population were protected from the major disease by having variola minor. In the great pandemic of 1870–72 there was a terrible death-roll among vaccinated people. That fact did not militate against Jenner's great discovery; the need was to recognise that its protection lasted only for a limited time.

REVIEWS AND NOTICES OF BOOKS

Recent Advances in Endocrinology

By A. T. CAMERON, M.A., D.Sc. Edin., F.I.C., F.R.S.C., Professor of Biochemistry, Faculty of Medicine, University of Manitoba; Biochemist, Winnipeg General Hospital. London: J. and A. Churchill. 1933. Pp. 365. 15s.

THE Recent Advances series has set and maintained a standard that assures for each new addition an eager reception, and this volume will more than justify expectations. The literature of endocrinology has grown of recent years more rapidly than that concerned with any other branch of medicine, and whilst the number of facts collected seems overwhelming, their interpretation is for the most part tentative and their correlation still to seek. To give a clear and moderate view of the present state of knowledge and of the main lines along which advance is being made, in many different fields of research, is a real achievement. It is significant that the work has been entrusted to a biochemist; the final building of a cosmos out of so much chaos must ultimately depend on the identification and synthesis in pure chemical form of the various endocrine principles that interact on the body mechanism. Indeed, the author stresses as a fundamental concept the discard of the "detoxication" theory of endocrine action and the recognition of the production of one or more specific chemical substances by each gland. Whilst such substances may be produced in certain pathological states in excess or in diminished amount, the glands do not in any circumstances produce abnormal compounds.

At the same time it is evident that much of our present knowledge of endocrine function was in the first instance gleaned from the correlation of clinical with pathological observation. This is well exemplified by the history of the investigation of the pituitary, to which has recently been added the syndrome attributed by Harvey Cushing to anterior basophilic adenomata. The chapter in which Dr. Cameron considers endocrine inter-relationships is perhaps the most stimulating in the book, though it leaves little doubt as to the magnitude of the new worlds left to conquer. Indeed, even the section on the thyroid (which carries some 275 references) concludes with a formidable list of "still unknowns." This book should suggest further research to those competent to undertake it and to others will be invaluable as a summary of the progress already achieved.

Infections of the Hand

Sixth edition. By ALLEN B. KANAVEL, M.D., Sc.D., Professor of Surgery, Northwestern University Medical School, Chicago; Attending Surgeon, Wesley Memorial and Passavant Memorial Hospitals, Chicago. London: Baillière, Tindall and Cox. 1934. Pp. 552. 30s.

THOUGH nine years have elapsed since the previous edition of this famous work, it is significant that the additions and changes are of minor importance. One notable change appears in the segregation of the details of the anatomy of the hand, studied by serial sections, paste injections, and dissections at the beginning of the book. This is an advantage in that the clinical section, which appears later, is unhampered by anatomical detail, and is, in consequence, easier to grasp quickly. The rearrangement is made possible by the fact that the detailed anatomy of the hand is now, thanks to Kanavel, more generally taught and understood, and does not require repeated emphasis. It is a matter for regret, however, that

the text in this important section is not always clear, and the phraseology is somewhat loose. The use of the terms "above" and "upward" on p. 39, and "floor and dorsal wall" on p. 41, are examples of an unhappy choice of words.

The clinical section of the book is better than ever. Important new chapters are added upon the function of the hand, prophylactic treatment of injuries, and the use of splints. Special types of infections—e.g., following bites, injuries from indelible pencils, implantation of cattle hair, and so forth—are fully described, and all this without loss to the chapters dealing with the more common infections—felons, paronychia, lymphangitis, tendon sheath and major fascial-space infections. The last part of the work deals with complications and sequelæ of infections and their treatment.

The book is well printed on paper of fine quality, and contains 216 illustrations, many in colour. It has deservedly become a classic, and its important lesson is so well presented that neither surgeon nor practitioner should fail to have it on his shelf.

Einführung in Geist und Studium der Medizin

By Dr. Med. GEORG B. GRUBER, Professor of Pathology at the University of Göttingen. Leipzig: Georg Thieme. 1933. Pp. 271. M.4.80.

Prof. Gruber's book is the substance of twelve lectures on the history and philosophy of medicine. Within these 271 pages everyone who has contributed something of real importance to medicine is mentioned, from Hippocrates downwards. Most authors who attempt to give a little of everything in such a work produce a sort of Baedeker guide of which every line is almost painfully pregnant with information. Others in an attempt to be catholic end in being simply superficial. On the whole, Prof. Gruber has succeeded in avoiding these two main pitfalls, and in leaving on the mind of the reader a pleasant impression of a tour through the realms of medicine with a guide who has a sympathetic conception of the traveller's mental digestive capacity. There are two indexes, one of persons and one of subjects. A glance at either will show how wide is the field over which the author has ranged.

Recent Advances in the Study of Plant Viruses

By KENNETH M. SMITH, D.Sc. Manch. Virus Research Station, School of Agriculture, Cambridge. London: J. and A. Churchill. 1933. Pp. 423. 15s.

IN these days of intense specialisation workers in even slightly different fields of research tend to get out of touch with one another. Those studying the filtrable viruses causing disease in animals, for instance, often know little or nothing of what is being done in the very closely related subject of plant viruses. Discussions on filtrable viruses have certainly been staged at which both animal and plant pathologists were represented, but isolated occasions do not supply the intimate contact and frequent exchange of view which would be mutually helpful. It is for this reason that we commend this book to those interested in animal viruses. Dr. Kenneth Smith speaks with authority on plant viruses, but what makes his work of especial value is the fact that he has taken the trouble to acquaint himself with the work in progress in the study of animal viruses. The book is so richly documented as to make stiff reading, but it is well worth tackling, since the problems presenting themselves for solution are brought into prominence and suggestions are made as to new lines of approach. In view of the number of general articles on filtrable viruses that T. M. Rivers has written, it is probably only natural that he should be cited as the final arbiter on all questions related to this subject. But it must be remembered that Rivers's opinion is not always shared by virus workers in this country. For instance, when discussing the attempt to estimate the size of certain viruses, the author records Rivers's dismay at the lack of consideration given to the possibility of these viruses being adsorbed to cell products. But surely J. E. Barnard's work has shown that these virus particles have the definite structure of micro-organisms.

This book will cheer those studying animal viruses in one respect—it will make them realise that if their task is difficult, it is certainly less complicated than that confronting plant pathologists.

Modern Methods of Feeding in Infancy and Childhood

Fourth edition. By DONALD PATERSON, B.A., M.D. Edin., F.R.C.P. Lond., Physician for Diseases of Children, Westminster Hospital; Physician to Out-patients, Hospital for Sick Children, Great Ormond-street; and J. FOREST SMITH, F.R.C.P. Lond., Physician to Out-patients, St. Thomas's Hospital. London: Constable and Co. Ltd. 1934. Pp. 214. 7s. 6d.

THE series in which this book appears was originally designed for the practitioner, but in this edition the authors have cast their net wider to include the more intelligent parent and "nanny" in their audience. A number of illustrations and diets for older children in specific diseases, and a series of nurses' and students' examination papers have been added. As in previous editions the food tables and analyses of patent foods and dried milks are excellent; there are now so many of the latter on the market that some such book of reference is essential for anyone who has to cope with infants fed in widely different ways. The practical difficulties of management are dealt with clearly and helpfully, and such problems as weaning, establishment of adequate breast milk secretion, and the introduction of a mixed diet are considered in detail. The only criticism we would offer is that the authors have over-simplified the scientific problems of nutrition for a volume which still claims to be a medical monograph. As a practical guide, however, this book can be warmly recommended.

Diabetes: Reasons and Recipes

By E. E. CLAXTON, M.B., B.S. Lond., D.T.M. & H., and LUCY BURDEKIN. London: John Lane The Bodley Head Limited. 1933. Pp. 188. 5s.

THIS book should be really useful to the diabetic patient for whom it is written, and has the great merit of optimism. The preliminary explanation of the disease is clear and simple, though the comparison of diabetic metabolism to disorder at the General Post Office is not very illuminating. The book chiefly consists of diabetic recipes and details about weighed diets. The methods employed come directly from "The Diabetic Life," and the 5-gramme food tables are identical with those set out in that book, though differently arranged. One of the best features of the work is the admirable illustrations of the technique of insulin injections.

THE LANCET

LONDON: SATURDAY, FEBRUARY 17, 1934

AUTOPSIES UNDER INDECENT CONDITIONS

AFTER protesting for some years to the district coroner at the conditions under which local doctors are called upon to perform post-mortem examinations, Dr. D. G. GARNETT, medical officer of health for Leiston, Suffolk, has written an open letter to the Home Office, which appeared in the *Leiston Observer* on Jan. 13th. He has, he says, received sympathy on all hands—from the coroner, from the local council, from the East Suffolk county council, from the police, and from the public—but each and all disclaim responsibility and refer him to someone else. He was recently called on to perform an autopsy in a place where there was scarcely room to turn and where there was no means of washing, as he found to his cost when he accidentally cut himself. It appears in many districts to be usual for an examination to be made in the living-room of the house in which the death has occurred. Dr. GARNETT is not asking that each district council should provide its own mortuary. One centrally placed should, he thinks, serve three or four districts if proper transport were arranged, and no doctor would object to drive a few miles if he could then be assured of performing the autopsy under decent conditions.

This difficulty, which does not occur in London, is one to which the Departmental Committee on Coroners referred in 1910. This committee said the coroner ought to be able to take advantage of the hospital accommodation within or outside his district. "There is every possible objection to a post-mortem examination being conducted in a private house." The committee had plenty of evidence on this point. A coroner for a large district in South Wales, where few hospitals were accessible, said that most of the post-mortems took place on kitchen tables in overcrowded dwelling-houses. A metropolitan police surgeon described the unpleasantness of taking off the skull cap with relatives within earshot. A Lancashire coroner spoke of autopsies conducted in a stable, adding that rats were apt to eat parts of the bodies in these surroundings. If these revolting conditions existed there was clearly something wrong. The law has hardly been helpful either in its language or in its application. The Public Health Act of 1875 empowered local authorities to provide mortuaries under Section 141 or post-mortem rooms under Section 143. The Local Government Board (now replaced by the Ministry of Health) was authorised to insist upon local action under Section 141, but not under Section 143. Moreover the Act specified that the post-mortem room must not be provided in a mortuary. The Board felt obliged to insist that the one place must not be used for the purpose of the other. The restriction was probably imposed to reassure public opinion, which has always been sensitive as to the possible abuse of anatomical opportunities. It was realised too that relatives going to see a body at the mortuary ought not to be distressed by the sight of a post-mortem examination conducted upon another body. At any rate the Local Government Board deprecated the housing of mortuary and post-mortem room under the same roof. These requirements in the provinces may be contrasted with the metropolitan arrangements under the Public Health (London) Act of 1891; a sanitary authority in London may (and, if required by the L.C.C., must) provide a place for post-mortem examinations, and this "may be provided in connexion with a mortuary, but this enactment shall not authorise the conducting of any post-mortem examination in a mortuary."[1] So curious was the legal position outside London that a coroner, it seems, could not order removal of a body to a mortuary for a post-mortem examination, but, if the body was already deposited in a mortuary, he could order it to be examined there. Local authorities could unite for the joint provision of proper accommodation, but here there was another hitch. If the coroner let the body go out of his district for an autopsy he surrendered his jurisdiction over it to another coroner. This awkwardness was eventually remedied by Section 24 of the Coroners (Amendment) Act of 1926.

The only hope, it seems, of the many doctors who have to perform autopsies under grossly unsuitable conditions is to stimulate the local authority to make the necessary provision under Section 143, either independently or in combination with another authority. Jervis on Coroners suggests that the parish officers have a common-law duty to provide some place for the examination of a body. The book hints at the possibility of depositing the corpse, if no other convenient place can be found, in the parlour of the parish churchwarden. Perhaps, since the Rating Act of 1925 and the consequential Overseers Order of 1927, this responsibility of the parish officers has been transferred to the rating authority. Be that as it may, the present haphazard arrangements are evidently unsatisfactory. There have, indeed, often been complaints of the shortage of proper accommodation for the holding of the inquest itself. The Licensing Act forbids it to be held in a public-house if other suitable premises have been provided—which is not always the case. Coroners of country districts told the Departmental Committee that they usually managed to get the town hall or the magistrates' court where these were to be had; in the villages they sometimes had the use of the reading-room. One coroner said the village schoolmaster would sometimes obligingly give the children a holiday so as to make the schoolroom available. Now that our country districts are organised under bigger and richer local authorities and that the distribution of public facilities is studied and reviewed, there seems no excuse for the embarrassments of which Dr. GARNETT justly complains.

[1] See THE LANCET, 1933, ii., 1188.

RETINAL DIATHERMY

THE progress made in the successful treatment of detached retina during the last few years is one of the outstanding facts in ophthalmological practice. The credit for this advance is due chiefly to J. GONIN, of Lausanne, who was the first to draw attention to the almost constant presence of holes in the retina—not necessarily in the detached portion, but usually in the peripheral portion beyond the equator—and to the success following the sealing up of these holes. To British ophthalmologists a great impetus was given by the presence of Prof. GONIN at the Oxford Congress of 1930. In the Mackenzie memorial lecture,[1] delivered last year at Glasgow, he emphasised another factor in the causation of most cases of detachment—namely, a partially fluid vitreous. The first to advance the theory that holes in a detached retina are due to the dragging force of a degenerated vitreous was LEBER. The mechanism by which adhesion between a vitreous shrunk into the anterior part of the chamber, with spots in the peripheral portion of the retina, causes a pull on the latter which is liable to produce a tear is illustrated in an interesting way in a recent article[2] by Prof. KARL LINDNER, of Vienna, who points out the effect that any sudden lateral rotation of the globe must have in increasing the force of the pull. Once a hole has been formed the presence of liquid in the vitreous chamber is a factor that necessarily increases the extent of the detachment with every rotation of the eyeball. GONIN sums up the matter thus:—

> "The presence of a hole or holes is a necessary condition of any loose detachment, but it is not the only one: previous or subsequent alterations of the vitreous body allow these holes to become the starting point of a progressive detachment."

Other factors in the pathogenesis of holes are: weak spots in the retina due to a previous choroido-retinitis; the rupture of retinal cysts which are especially frequent in the part of the retina in front of the ora serrata; myopia, which is often associated with a fluid vitreous and is present in a large proportion of cases but which is not a necessary factor in detachment; and trauma. This last is a comparatively frequent factor in cases of so-called disinsertion, where the retina is torn away from its anterior attachment to the choroid for a portion of its periphery. The fact that such a large proportion of holes are in front of the ora serrata accounts for the extreme difficulty that often exists in locating them with the ophthalmoscope. As has been wittily remarked, "There is only one thing more tedious than looking for a hole oneself, and that is watching someone else looking for it," but GONIN finds it worse to be "looking for a hole while someone else is watching you." The patient, who has the worst part of the experience, should be made to understand that the search is an indispensable part of the diagnosis and therefore of the cure.

The first object of treatment is to seal up the hole or holes. Different methods of effecting this have been evolved; a good account of the present position as shown by a comparison of results at one large eye hospital will be found in the papers[3] of C. DEE SHAPLAND based on recent experience at Moorfields. From Dec. 27th, 1929, when the first operation by Gonin's method was performed, until Jan. 6th, 1933, the number of cases of detachment admitted to the wards was 425. From the commencement of this period until Feb. 13th, 1932, all cases were operated on by the method of cautery puncture, either following Gonin's procedure with the Paquelin cautery or with the electric thermo-cautery. In 204 cases in which holes were located the proportion of "cures"—i.e., cases in which the retina was found to be reattached at an examination undertaken during the first three months of 1933, i.e., a year or more after operation—was found to be 27·6 per cent. On the other hand the result of 17 "blind" operations in which no hole had been located was uniformly unsuccessful in effecting a cure, although in some cases there was "improvement." Of the extreme importance of locating the hole exactly whenever possible there is no doubt. From Feb. 13th, 1932, the method of ignipuncture gave way to newer methods. The first used was that known as the Guist-Lindner method. After exposure of the sclera, multiple holes are made with a trephine down to the exterior surface of the choroid in the region of the retinal hole and points of caustic potash applied for one second to each spot so exposed. Afterwards the choroid is pierced in a few places, so as to evacuate the subretinal fluid. This was the method in vogue at Moorfields during the first half of 1932. From then onwards nearly all cases have been treated on a new principle—diathermy, the method chosen being that devised by LARSSON of Stockholm. The method of obtaining heat is by means of a high-frequency current applied to the exterior surface of the exposed sclera with the object of causing an inflammatory reaction on its interior surface at spots involving the area of the retinal hole, the subretinal fluid being subsequently evacuated as in the Lindner operation. A still more recent application of the diathermy method, in which no puncture is required to let out subretinal fluid, has been devised by SAFAR, of Vienna, and is already being put into practice in London.[4]

According to the Moorfields' statistics the diathermy operation has proved to be the most successful of the modern methods. Simple detachment of the retina, from being a condition in which cure was almost hopeless, is now one in which from a quarter to a half of the cases found suitable for operation—and these include nearly all recent cases—can actually be cured. By cure is meant a reattachment of the retina which is permanent, and no case is entitled to be so described unless it has persisted without relapse for a year. The degenerations of the vitreous which caused the original detachment are unfortunately only too likely to make themselves felt. Retinal function appears to survive a considerable

[1] Brit. Jour. Ophth., December, 1933, p. 726.
[2] Wien. klin. Woch., Jan. 5th, p. 19.
[3] Trans. Ophth. Soc., 1933, liii., 127; Brit. Jour. Ophth., January, 1934, p. 1.
[4] Trans. Ophth. Soc., 1933, liii., 488.

period of detachment, but naturally the prospect of relief from an operation diminishes with the lapse of time. Where the macular area has been detached the prognosis must necessarily be less good. It will be asked, is there no danger of the sight of an eye with detachment being made worse by an operation? GONIN'S original operation was attended, as he himself admitted, by a certain risk of intra-ocular hæmorrhage. That is the good reason why it should be supplanted by operations which do not penetrate the choroid, except to a minimal degree. Diathermy seems to have no inherent risk. The operation, however, is a delicate one and can only be performed confidently by someone with experience. The practitioner's effort should be directed to limiting the extent of the detachment by keeping both eyes covered either with a bandage or with opaque goggles provided with central openings the size of the pupil, as recommended by LINDNER.

THE BRAIN OF THE AFRICAN NATIVE

To those who have lived amongst them, the native boys of East Africa have often an enviable appearance of intelligence. Idiots and imbeciles are rarely seen; the racial tradition is against allowing their survival. Yet this "native" intelligence of the East African boy impresses most by his ready grasp of novel, if simple, things, and does not seem to be capable of as much education or training as might at first sight be hoped for. Two reasons have been suggested for this: one is that the cerebral cortex of the East African differs from that of the European in a way which limits the acquisition and retention of more elaborate acquired responses; the other is that these natives have a rate and sequence of development and an early regression of intellectual faculties which is quite different. These suggestions have recently been investigated by Dr. H. L. GORDON [1] and by Dr. F. W. VINT,[2] both working in Kenya. VINT has examined the brains of 100 adult (over 18 years) natives who had died in hospital. Microscopically, he finds that in the brain of the native, as compared with that of the normal European, the cortical laminæ are narrower, the pyramidal cells of the supragranular cortex and the Betz cells in the motor area are smaller and not so well differentiated, though not less numerous. Macroscopically, he notes that the native brain weighs about 10 per cent. less and measures less in vertical height; there is no relative smallness of any one part—e.g., of the frontal lobes—but certain stigmata of racial backwardness, such as a lunate sulcus and an exposed insula, are present in many of those he examined.

The most that can be said of the microscopical characteristics which VINT describes is that they suggest a slightly lower degree of differentiation of those parts of the brain which are usually associated with the cortical integrative activity underlying personality and intellect. The gross-weight difference must be interpreted with even greater caution, since these brains were obtained from hospital patients dead from unspecified diseases and are here compared with normal European brains. The other peculiarities are not significant in terms of cortical function. An estimate of brain volume made by GORDON from measurements of cranial diameters agrees with VINT in showing a figure lower than that accepted as the normal European average, but here again the data should not be interpreted with too much zeal, since the correlation between brain size and mental ability, though positive, is slight. Commenting on Dr. GORDON'S plea that the Kenya native, with his brain capacity of 1316 c.cm., should be protected from the harmful influences of Europeans with a cranial content of 1481, Prof. J. B. S. HALDANE remarks that the average cranial capacity of a group of male Eskimos was 1563 c.cm. "Charity begins at home," he says, "so let us hope that, if the natives of Kenya are to be protected from European education, steps will be taken at the same time to safeguard Europe from the disintegrating effect of Eskimo culture, which may well prove too complex for beings of a smaller mental capacity." [3]

Measurement of certain physical characteristics such as weight, height, grasping-power, and vital capacity shows that the native boy up to the age of 14 or 16 is superior to the European boy in all these respects, and during the same age-period there is no conspicuous difference in the general impression that they give with regard to intelligence. It is after this age that the most significant deviation in development takes place, for the native curve of development falls off progressively after the age of 15, while that of the European is steadily continued until about 20. With this slackening of development coincides the apparent falling-off of intelligence, but this falling-off cannot be correlated (as GORDON suggests) with a falling-away of the brain weight after the age of 18 years, since the normal European brain also decreases in weight progressively after the age of 14 (R. PEARL [4]), without any corresponding mental regression. The earlier development of physical strength in the natives is probably determined by the circumstances in which they are nurtured and the greater physical dangers to which they are subjected at an early age. The later slackening in development is then to be expected in a race which, when fully adult, is of less than European stature. In the absence of enough acceptable intelligence tests [5] it cannot be asserted without question that there is a loss of intellectual ability; the native boy who has hitherto been "a bright, malleable, nice little fellow" and who after 15 disappoints his employers by failing to develop as they had hoped, may have regressed in usefulness in the circumstances in which nature and colonial expansion have combined to place him, but cannot without further proof be regarded as having regressed in intelligence.

[1] Eugenics Rev., January, 1934, p. 223.
[2] Jour. of Anat., January, 1934, p. 216.
[3] The Times, Dec. 19th, 1933.
[4] Biometrika, 1905, iv., 53.
[5] An interesting attempt to compare the intelligence of African and European boys is described by Mr. R. A. C. Oliver, East African Med. Jour., 1932, ix., 160 and 193.

ANNOTATIONS

PARTURITION AND THE CORPUS LUTEUM

LITTLE is yet known about the factors which bring on parturition. It is still a mystery why the female mammal, so long tolerant of what for practical purposes is a foreign body, should suddenly empty her uterus. During the last quarter of a century one hypothesis has followed another with startling speed, but some piece of evidence can be brought up against any single explanation. One well-supported theory postulates that the functional decline of the corpus luteum initiates the events leading to parturition. The fact that in many animals removal of the corpora lutea of pregnancy causes rapid abortion and that such abortion can be prevented by administration of luteal extracts is strongly in favour of this view. On the other hand, in many species the corpus luteum regresses histologically long before parturition, and in some—man, for instance—double oöphorectomy during pregnancy does not necessarily result in abortion. The discovery that in the rabbit ovulation can be induced at any stage during pregnancy by a single injection of gonadotropic substance from anterior pituitary tissue or from the urine of pregnancy has made it possible to provide the pregnant rabbit with a new set of corpora lutea and to examine the effect of prolonging luteal activity. Franklin F. Snyder [1] now reports that when ovulation was induced in rabbits about 25 days pregnant, so that at term (32 days) the new corpora lutea would be at the height of their activity, normal parturition was never observed. In most animals the fœtuses were retained for about ten days beyond term—i.e., until about the end of functional activity of the new corpora lutea. In a few cases the fœtuses were retained longer, but this was associated with injury to the uterine wall. Pituitrin administered at term failed to induce parturition even in doses 1000 times that normally effective. The fœtuses survived for only about three days beyond term, but even so they developed to excessive size. Snyder concludes that, in the rabbit at least, there are no grounds for supposing that changes in the fœtus, senility of the placenta, or mechanical distention of the uterus play any part in determining the onset of parturition. Retention of the fœtus is controlled by the functional activity of the corpus luteum.

IS CHROMIUM TOXIC?

CHROMIC acid is well known for its hardening action on animal tissues. The rapid popularisation of chromium plating and the increasing use of stainless steels are bringing before the public articles containing chromium which come in contact with foodstuffs and drinking water. If chromium is taken up from them, we desire to know whether it is in any way harmful. Men employed in making bichromate of potash, or in using it for tanning, suffer from dermatitis, chrome ulcers, and—if exposed to dust—from perforation of their nasal septa. Those who work at chromium plating where they may be exposed to vapours containing chromium are also liable to nasal perforation. In Belgium the chrome ulcer has become so well known as to earn a special name, *rossignol* or *pigeonnau*.[2] Before however ascribing these lesions to toxicity, we should bear in mind that men exposed to brine, which is just a strong solution of common salt, suffer from indolent skin ulcers, while women employed in packing dry table salt have been found with perforated nasal septa. These lesions may be attributed to the hygroscopic properties of the substances in question rather than to any toxic characteristic. Some direct experiments have recently been made on animals to ascertain whether chromium possesses any toxicity. Chromium carbonate and chromium phosphate were administered [3] by ingestion and by inhalation. Relatively gross amounts were inhaled and large quantities were ingested without causing any illness or producing any tissue change; on the contrary the cats throve and put on weight. Since poison absorbed through the digestive tract tends to be short-circuited and excreted unchanged with the bile, by reason of the protective mechanism of the liver, the inhalation experiments are of particular interest. The lungs of the dusted cats showed a bluish-green mottling and traces of chromium were found localised in other tissues, in contradistinction to its absence from the tissues of the fed cats; nevertheless, these dusted cats flourished just as did the others. It seems probable that chromium, in the form of chromic salts, is inert and possesses no toxic properties.

ERYTHEMA NODOSUM AND TUBERCULOSIS

ON the assumption that erythema nodosum is often the earliest sign of infection with tuberculosis, Dr. E. Törnell [4] has kept a close lookout for it in his dispensary work, using it as a clue to the discovery of tuberculous contacts. His area is a Swedish town of 40,000 inhabitants, with a surrounding population of about 58,000, and in the course of 18 months, he says, 150 cases of erythema nodosum came to light. About half of them were recent cases; the others gave a history of an attack a year or more earlier. In 107 cases the erythema nodosum was "primary"; in the remainder it was secondary to some other condition such as sore-throat or measles. There were only 27 males among the 150 patients, and all of them were under 24, whereas the ages of the females ranged up to 50. In all but one of the primary cases positive tuberculin reactions were obtained, and in most cases there were definite radiographic changes of the type associated with a primary tuberculous infection. Among the secondary cases of erythema nodosum there were, however, several in which skiagrams of the lungs were normal. Attempts to locate the sources of infection in the 107 cases of primary erythema nodosum were successful in all but 3 child and 26 adult cases. In the children, the source of infection was found as a rule in the home among relatives, whereas in the adults it was usually found outside the home, in a factory or elsewhere. During his investigations of adult cases Törnell usually received an answer in the negative to his inquiry after a known tuberculous contact; but when he asked after other cases of erythema nodosum or pleurisy among fellow-workers, he not infrequently obtained useful clues. In three factories in which several cases of erythema nodosum had occurred he undertook wholesale X ray examinations of groups of 25 to 30 workers at a time, and at all three factories patients with open cavities were thus discovered. His study shows that when practitioners refer all their cases of erythema nodosum to the tuberculosis officer the latter can make good use of the information they convey.

It is hard to say how many cases might be dis-

[1] Bull. Johns Hopkins Hosp., January, 1934, p. 1.
[2] See THE LANCET, 1931, ii., 647.
[3] Akatsuka, K., and Fairhall, L. T.: Jour. of Indust. Hyg., January, 1934, pp. 1–24.
[4] Nordisk Med. Tidskr., 1933, vi., No. 37.

covered in this way, for there are very few areas where the condition is compulsorily notifiable. In one of them, however, Göteborg (Gothenburg) in Sweden, which has a population of some 250,000, about 100 cases are notified annually. In this city practitioners and public alike associate erythema nodosum with tuberculosis, notably in children. In Denmark on the other hand the condition is taken much less seriously. The contrast has led Dr. E. Mogensen [5] to comb out 325 cases of erythema nodosum from the records of several Danish hospitals, and trace these patients' subsequent history. In his series, too, the predominance of females was overwhelming; indeed, among the 264 patients over the age of 15, there were only 6 males—less than 3 per cent. Of the 114 patients who could be traced, 5 had already contracted tuberculosis when the erythema nodosum developed, and among the remaining 109 there were 19 (17 per cent.) who developed tuberculosis subsequently. While Mogensen could establish no special connexion between erythema nodosum and rheumatic fever, he holds that the proportion of patients who later developed tuberculosis shows a more than accidental relationship between these two diseases. He tones down this verdict with the consolatory reflection that the pulmonary tuberculosis which follows erythema nodosum is apt to be comparatively benign.

MILK—RAW OR HEATED

THE evidence that raw cow's milk often causes human disease is now so strong that those who try to belittle it lay themselves open to charges of ineducability or bad faith. Hence many of the antagonists of pasteurisation have changed their ground and base their opposition on the harm it is supposed to do the milk. Experiments on laboratory animals have on the whole failed to show any significant inferiority of low-temperature pasteurised milk to raw, but most workers will readily admit that deductions drawn from results on small animals may well be misleading when applied to man. Interest in this question is therefore likely to centre more and more around experiments made on the larger animals, and especially around observations on the human infant. In a series of recent papers W. Catel [6] records his investigations on the goat. Eight kids, a few days old, were fed alternately on raw goat's milk and on goat's milk heated to boiling-point for three minutes. Each diet was maintained for about ten days at a time, and the weight increase was measured. The results showed clearly that the animals grew more rapidly during the raw than during the boiled milk periods. In another experiment pairs of young goats, mainly twins, were fed one on raw, the other on autoclaved milk (140° C. for 30 minutes). Not only was the daily weight increase of the animal on raw greater than that of the corresponding animal on autoclaved milk, but metabolism studies showed that the use of protein, fat, and carbohydrate, and the mineral balance, were better on the raw milk dietary. The addition of yeast, irradiated ergosterol, and lemon juice to the autoclaved milk led to great improvement, and both growth and general metabolism approached the normal. In a further experiment, made on 11 kids one to two months old, cow's milk was used in place of goat's, and raw and boiled milk were fed to the same animal alternately for periods of ten days at a time. Contrary to the results of the first experiment, most of the animals gained weight much more quickly when they were getting boiled milk. Catel concludes that animals thrive better on raw than on heated homologous milk, but that on heterologous milk the reverse is true. So far as the human infant is concerned, he is strongly in favour of boiling cow's milk immediately before use—a recommendation which finds some support in a small controlled experiment lately described by N. Morris and S. Graham.[7] In all this work, it must be noted, a comparison was made between raw and boiled or autoclaved milk, and further observations are needed before one can assess the significance of the apparently smaller alterations caused by low-temperature pasteurisation. The whole question is discussed by a number of authorities in the January number of the *Scottish Journal of Agriculture*, under the heading Raw versus Pasteurised Milk.

[5] Acta Med. Scand., 1933, lxxx., 480.
[6] Jahrb. f. Kinderheilk., 1929–30, cxxvi., 38, and 1932, cxxiv., 278; Deut. med. Woch., 1933, lix., 1689.

THE ANNALS OF EUGENICS

WITH the issue of the fifth volume of the *Annals of Eugenics* Prof. Karl Pearson relinquishes his task as editor to his successor in the Galton chair, Prof. R. A. Fisher. In this final publication he has included an exceptional number of papers of interest to medical readers. Foremost, perhaps, is a report by Dr. Percy Stocks and Miss Karn of a coöperative study of the habits, home life, dietary, and family histories of 462 patients suffering from cancer and of a nearly equal number of control patients. The two series were first shown to be comparable with regard to such factors as age, occupational and civil status, and place of residence in respect of urbanisation, and were then compared for a very large number of characteristics. For instance each patient was asked how often he or she had been accustomed to take certain articles of food and drink prior to illness. The replies were classified on the schedules as (1) never, (2) occasionally, (3) once a week at least but not daily, (4) daily. The percentages falling in each category are compared between the two sets of patients, those with cancer and those without. No significant differences are revealed for the majority of the common articles of diet—viz., white bread, brown bread, fresh and chilled beef and mutton, tinned meat, bacon or ham, liver, pork or sausages, herrings or kippers, tinned fish, cereals, fresh and tinned fruits, potatoes, lettuces, butter, cheese, cream, sugar, pepper, bottled sauces, vinegar, tea, coffee, mineral waters, wines, spirits, and cider. The frequency with which tomatoes were eaten is remarkably similar in the two groups and thus lends no support to the popular superstition, already discredited by Dr. des Ligneris [8], that tomatoes are associated with cancer. On the other hand, the cancer patients had, according to the information they gave, been accustomed to drink unboiled milk less frequently on the average than the control patients (though this was not true for boiled milk) and daily beer-drinking was more frequent than amongst the controls. A similar type of association was suggested by the statistics for wholemeal bread, and for a number of vegetables, namely, carrots, turnips, cauliflower, cabbage, onions, watercress, and beetroot. There is here a slight suggestion that vitamins B, C, or D, or a combination of them, might be concerned in the association with the freedom from cancer to which the figures seem to point. The material and its classification are inevitably somewhat crude, and the authors state emphatically that they do not consider this evidence sufficient basis for any conclusion; they do regard it as justification for further research, statistical and experimental.

[7] THE LANCET, 1933, ii., 1314. [8] Ibid., 1933, ii., 698.

So far as evidence could be collected, there appeared to be no support for the belief in "cancer houses" or for the belief that constipation in general predisposes to cancer—though there was a slight tendency amongst cancer patients for constipation prior to illness to be associated with the location of the cancer in the digestive tract rather than in other sites. No evidence of hereditary transmission was found, or that such complaints as chronic dyspepsia, appendicitis, gall-stones, catarrhal jaundice, hæmorrhoids, diabetes, rheumatism, acute or chronic, were precursors or predisposed to cancer in general. Numerous other factors are discussed.

Dr. Stocks also contributes to this journal a continuation of his study of the spread of variola minor. In this section of the investigation he analyses the statistics of the epidemic in Durham and neighbouring counties in 1922–31. A definite seasonal wave of incidence is apparent, the maximum (over five times the minimum) lying in the first four weeks of the year and the minimum from mid-August to mid-October. Although there was a strong tendency for the epidemic to become established in those districts where the population was more densely housed, it seemed that overcrowding was associated not with increase in the intensity of the epidemic in a given time but rather with a prolongation of the epidemic at the ordinary level of intensity.

Utilising information supplied by patients under the care of Colonel R. H. Elliot, a preliminary note is contributed by Dr. Julia Bell on the inheritance of migraine. Ten pedigrees have so far been obtained and suggest that the inheritable factor may become manifest in a variety of ways, such complaints as asthma, hay-fever, eczema, and urticaria being relatively often reported. Little is known of the incidence of such conditions in the general population, but with the systematic collection of family histories Dr. Bell hopes to make clearer the importance of heredity in migraine itself and the genetic significance of the allied conditions. Further papers include a statistical discussion by Dr. Ethel Elderton of the results of the Lanarkshire milk experiment, in which large numbers of school-children were given extra milk daily, a study of inherited brachydactyly in a New Zealand family by Dr. K. I. Nissen, and a report of an investigation made by Dr. Henry Ruger, in conjunction with Prof. Pearson, into the inter-relationship of some of the characters in man based upon material collected by Galton.

THE EFFECT OF POSTURE ON THE PELVIC CANAL

SOME years ago Dr. Kathleen Vaughan, who had been superintendent of a zenana hospital in Kashmir, published a little book [1] illustrating the effect of the purdah system on motherhood; the woman kept prisoner in her home and largely deprived of sunlight is liable to gross pelvic deformity which renders childbirth tedious and risky. But civilisation, she thought, should not necessarily involve such difficulty. Amplifying this view at the Royal Society of Medicine Dr. Vaughan remarked that "civilisation with its confinement of children indoors, and its absence of sunlight on the skin necessary for the proper calcification of growing bone, and the disuse of the sacro-iliac joints, alters the normal shape of the pelvis and makes childbirth difficult and dangerous." The solution of the problem of maternal mortality seems to her, therefore, to depend less on elaborate provision for abnormal childbirth than on returning to nature in regard to light, food, and exercise, so as to ensure proper development of the female pelvis. In a recent paper [2] Dr. Vaughan strongly advocates the sitting, squatting, or crouching position as the natural posture for childbirth, in lieu of the supine position adopted in America and in most European countries, and of the lateral position usual in this country. Among native races where the squatting position is assumed not only for defæcation but also during work or rest, pelvic development, she has ascertained, is perfect and childbirth easy. Radiograms accompanying this paper show that in the squatting position the pelvis becomes enlarged to an appreciable degree. While it was difficult to measure with perfect accuracy the increase in the antero-posterior diameter of the pelvic brim, she deduces from the other measurements a gain in the true conjugate of 1–1·5 cm., which, as she justly points out, "would often suffice to turn a difficult labour into an easy one." The result of the squatting position upon the three planes of the pelvis is briefly as follows:

(1) The inlet is enlarged by the backward movement of the top of the sacrum, adding at least 1 cm. to the antero-posterior diameter. The transverse diameter is also slightly increased by the outward thrust of the sacrum. (2) The plane of the cavity is unchanged (save for stretching due to the elasticity of the articulations) because it is measured from fixed points which cannot change their relative positions: the mid-point of the symphysis pubis and the second sacral cartilage. (3) At the outlet, not only is the antero-posterior diameter enlarged, but the transverse diameter is increased by the separation of the ischial tuberosities.

The net result of these changes is to turn the pelvis from a passage of varying calibre transversely oval at the brim, circular half-way down, and oval from back to front at the outlet, into a tube or canal of uniform measurements. In a woman about to give birth in this position, Dr. Vaughan writes, the lumbar curve in the spine is obliterated, and the whole passage is converted into a cylindrical tube.

Some degree of support for this theory is afforded by the recent work of two American physicians, Drs. W. F. Mengert and D. P. Murphy,[3] who show that variations in intra-abdominal pressure created by voluntary muscular effort may be measured indirectly by recording pressure transmitted to an air-inflated balloon within the vagina. During the development of this method it became evident that the pressure which a woman could create depended to a certain extent upon posture. It was found that a 30 per cent. greater pressure, i.e., straining efficiency, could be exerted in a sitting position than when lying in the left lateral (Sims) position, the two factors responsible for the increase being the weight of the viscera and increased purchase for muscular action. It was however only in the knee-elbow and the sitting postures that the subjects were able to use their abdominal muscles to greater advantage; in the other five postures studied—lateral, recumbent, semi-recumbent, squatting, and standing—the only factor appeared to be that of visceral weight, no increased efficiency of muscular contraction being observed. The suggestion made by these writers, namely, "a more liberal use of the sitting posture during the second stage whenever it is desired to expedite labour," may indicate one way in which a modification of the usual posture would be helpful. In practice it would seem that where there is a

[1] See THE LANCET, 1928, ii., 979.

[2] Arch. d'électr. méd., 1933, xli., 255.

[3] Surg., Gyn., and Obst., October, 1933, p. 487, and December, 1933, p. 745.

tendency to flattening or other deformity of the bony pelvis the squatting position might be given a trial; faulty presentation or other complications, in which an anæsthetic may be required, would render it undesirable; in the management of normal labour it should be unnecessary.

THE "CHILDREN'S MINIMUM"

A MEETING was held at the House of Commons on Feb. 15th in support of an organisation known as the Children's Minimum Campaign Committee, formed "to bring together those who believe that a first charge upon the returning prosperity of the nation should be the health of its children." The demand is made that every child shall receive sufficient nourishment for health and normal growth, and in a statement of policy the committee urges the Government to give effect to this principle by :—

(1) Providing that a daily ration of fresh milk should be made available for all children attending State-aided schools and for younger children through the public health department.

(2) Making compulsory instead of permissive the powers of local authorities under the Education Act, 1921, to provide school meals for children who by reason of the poverty of their parents are inadequately fed.

(3) Substantially increasing the allowances for the children of unemployed persons.

(4) Encouraging the extension on municipal housing estates of schemes of rent rebates where the family income is insufficient for minimum needs.

The chairman of the committee is Miss Eleanor Rathbone, M.P., and the secretary, Miss M. E. Green, who may be addressed at Room 116, Thames House, Millbank, London, S.W.1.

HOSPITAL PAY-BEDS AND THE CHARITY COMMISSIONERS

THE governors of Birmingham General Hospital have approved the application for a Bill to unite that institution and the Queen's Hospital in one corporation to be called the Birmingham United Hospital. At the special general meeting of the governors called for this purpose it was stated that the Attorney-General, who has a particular responsibility for private Bills affecting charities, had raised certain objections to the draft Bill, especially as regards the taking of paying patients, on the ground that such a practice, if developed to an unlimited extent, would squeeze out the poor. It was therefore desirable that a definite limit should be put both as to the proportion of accommodation for paying patients and the fees charged. The Treasury-Solicitor further intimated that the Government had seriously in mind passing an Act providing that no hospital may take paying patients unless under a scheme of the Charity Commissioners regulating the number of the beds and the amount of the fees, and pointed out that hospitals which have promoted private Bills on much the same lines have accepted this safeguard. The following draft clause has therefore been prepared :—

"Notwithstanding the trusts expressed or implied upon which the property and funds of the hospital are held, to maintain such parts of the hospital and such and so many beds therein and for such period as the Charity Commissioners may from time to time by order authorise for the reception and treatment of patients who are able and willing to pay such maximum charges as shall be specified by the Charity Commissioners in such order and to charge such patients fees not exceeding such maximum fees as may be specified in any order for the time being in force made by the Charity Commissioners."

This draft clause recalls the provision made by Parliament last year in the Samaritan Free Hospital for Women Act and the Cancer Hospital (Free) Act, though in each of these two precedents there is a reference to the fact that new buildings are being constructed in connexion with the pay-bed system. Another useful precedent in last year's local Acts is to be found in Section 6 of the Manchester Royal Infirmary Act.[1] It will be recalled that in the case of the Miller General Hospital the Supreme Court has sanctioned a tentative pay-bed scheme.[2] At the Middlesex Hospital (473 beds) the new Woolavington wing for paying patients, adapted from a building which formerly housed residents and nurses, contains 56 beds and a few cots, the charges ranging from 4 to 12 guineas a week.

The United Hospital is to take over the Birmingham Hospital Centre which will have a block devoted entirely to paying patients, and it has been found that, without taking the necessary powers in the Bill, it would be impossible to fulfil the arrangement made with the Centre for managing that block. A draft clause giving such power has therefore been added to the Bill. It has been intimated that so far from the Charity Commissioners being unreasonable in these matters the reverse might be expected.

VENEREAL CLINICS FOR SEAMEN

AN international agreement was reached at Brussels in 1924 to establish at all ports of call clinics for merchant seamen where they could get gratuitous advice and, if necessary, a bed, for the treatment of any venereal disease. The scheme included a record card to accompany the patient and help any doctor whom he should later consult. Much has been accomplished, although not all nations have signed, ratified, or adhered to the agreement. The revised list of centres (January, 1934) issued by the Ministry of Health is accompanied by a memorandum from the Office International d'Hygiène Publique, which begs for notice of alterations of places, times, or fees. The Office International submits that the port sanitary authority should be responsible for advertising and superintending the centres, and especially for providing a sufficient stock of the personal cards (preferably in stout envelopes) to supply each new patient at his first visit. It is stated that the Brussels agreement has greatly lessened the spread of venereal disease from port to port, besides providing seamen with treatment they would otherwise have lacked. Treatment appears to be generally gratuitous, or if not, there is the saving clause "free if unable to pay." Under Port Elizabeth is the curious entry, "5*s*. for treatment by doctor; 1*s*. for treatment by male attendant." The hours at which the centres are open are too apt to be limited to the forenoon, when seamen may have difficulty in attending; but London and Liverpool give opportunities till 8 P.M., Leningrad, Odessa, and Vladivostok open morning and evening, and Buenos Aires daily from 7 A.M. to 11 P.M.—a generous provision.

AIRS, WATERS, AND PLACES OF BRITAIN

WITH new type, new maps, many new photographs, new summaries, and a new sectional arrangement, the British Health Resorts Association handbook reaches the first rank of attractive works of reference. In this account of British spas, inland and seaside resorts—an appreciation of their medical values and uses in the prevention and cure of disease—Dr. Fortescue Fox as editor has enlisted the help of medical officers of health, the British Medical Association, local authorities, and many individuals. The

[1] THE LANCET, Jan. 6th, 1934, p. 46.
[2] Ibid., 1932, i., 1112.

result, however, is not a haphazard collection of facts, but a concise and consistent description of the British Isles and their amenities from the point of view of health. Revised by a medical advisory committee and unified through a single mind, the information is presented in such a way that medical readers and laymen are both likely to find, without difficulty, the information they want—and then to go on reading elsewhere. A welcome new feature of the book is a concluding section on the health resorts of the Dominions, and this we hope may later be extended. At present, however, the guide is chiefly for home consumption; for as the Minister of Health says in a foreword, "even amongst the medical profession the extent and variety of the health-giving properties and services available at our coastal resorts and inland watering-places are not always fully appreciated." We wish, therefore, that the British Health Resorts Association were able to send a copy to every practitioner, but as this is for financial reasons impossible the practitioner must swallow any disappointment he may feel and buy one for himself. The book is published by Messrs. J. and A. Churchill at 1*s.* and is obtainable through booksellers. The address of the Association, whose secretary is Dr. Alfred Cox, is 199, Piccadilly, London, W.1.

A JOURNAL OF HOSPITAL LIFE

WITH the current issue our contemporary *The Hospital* completes its 350th number since it was started by Mr. James McKay in 1904. The impetus was given by a group of young hospital officers with no capital but much keenness and energy, who were concerned more with the welfare of hospitals than with the interests of the officers, "unlike the majority of publications owned by professional associations," as the present editor somewhat acidly remarks. The journal was known as *Hospital Gazette* until it succeeded in 1922, on the death of Sir Henry Burdett, to the journal which he had carried on with such vigour for 36 years. Three years ago the journal was adopted also by the British Hospitals Association and has since been run by an editorial advisory board representing both. The editorship has always been an honorary post; all the ten holders of the chair are living, the last three being Capt. J. E. Stone, Mr. C. E. A. Bedwell, and Mr. F. B. Carroll, who is now in office. The present issue remarks that the circumstances of hospital officers are not worse now than they were a generation ago, although men and women without experience of hospital administration are still all too frequently appointed to high position. The uncertainty of the future lies in the development of rate-supported institutions which rely upon medical rather than lay administration.

IMPLANTATION OF THE URETER

ALTHOUGH T. J. Kirwin [1] makes it clear that ureteral implantation in the rectum leads to dilatation of the ureter and deterioration in renal function, he is convinced of its value in relieving the incontinence of ectopia vesicæ and the pain incidental to vesical carcinoma and severe tuberculosis. The three main causes of failure, he believes, are improper technique, stricture, and surgical trauma of the nerves and muscles of the ureter. While the first and second of these have long been recognised, the third has had insufficient attention. The experimental work of K. Alksne, it seems, has shown that if the ureter be divided and anastomosed, the waves of peristalsis travelling along the upper segment cease at the line of anastomosis. After a certain quantity of urine has collected in the lower segment, waves may appear here also; but they are independent of and disconnected with those of the upper segment. This interruption of peristalsis is not always the result of stricture due to scar-formation, but is probably caused by division of the two unbroken nerve networks described by Satani in the muscle layer of the ureter. This, in Kirwin's opinion, is the cause of the ureteral dilatation that always follows implantation, whether this be done into an infected bowel or a sterile bladder. None the less he regards the operation as very valuable; for, properly performed, it may extend life, health, and happiness to many who would otherwise suffer and die most miserably.

[1] Amer. Jour. Surg., January, 1934, p. 14.

CHICKEN-POX AND HERPES ZOSTER

MATERIAL from the earliest vesicles in cases of varicella or herpes zoster, with small samples of blood, are required by workers at the Lister Institute of Preventive Medicine. Practitioners in the London area ("not too remote from Chelsea") who have such cases under their care and would be willing to give facilities for access to them are invited to communicate by letter, post card, or telephone with Dr. C. R. Amies at the Lister Institute, Chelsea Bridge-road, London, S.W.1 (Sloane 2181). It is to be hoped that this request—which is, of course, addressed to those in charge of hospitals and institutions as well as to private practitioners—will meet with a ready response. Without such help from individuals it is difficult to obtain material of the kind required.

Mr. Canny Ryall, whose death occurred in London last Sunday, was senior surgeon to All Saints' Hospital for Genito-Urinary Diseases in Austral-street, which he had himself founded in 1911.

Dr. Christine Murrell, probate of whose will was granted on Monday, left a sum of £2000 to the British Medical Association as a loan fund for the aid of medical men or women starting in general practice. We understand that the legacy has been placed to the credit of the Sir Charles Hastings Fund under the title of the "Christine Murrell Bequest."

IT is announced that Major-General J. A. Hartigan has been appointed director-general of Army Medical Services in succession to Lieut.-General Sir Harold Fawcus, who is retiring at his own request. General Hartigan is at present deputy director of medical services, Aldershot Command, and the appointment takes effect on March 1st. Sir Harold Fawcus has been appointed director-general of the British Red Cross Society.

STUDENTS and friends of the late Dr. Joseph Babinski have made it their task to collect in a single volume of 640 pages the essentials of his publications now scattered through nearly 200 papers. Some are reproduced textually, others only in the detailed analysis of his works prepared by Babinski himself in 1913. The volume will be issued in the coming spring by MM. Masson et Cie, Paris, at a price of francs 120 to those who apply before March 31st.

INDEX TO "THE LANCET," VOL. II., 1933

THE Index and Title-page to Vol. II., 1933, which was completed with the issue of Dec. 30th, is now ready. A copy will be sent gratis to subscribers on receipt of a post-card addressed to the Manager of THE LANCET, 7, Adam-street, Adelphi, London, W.C.2. Subscribers who have not already indicated their desire to receive Indexes regularly as published should do so now.

THE PREVENTIVE ASPECTS OF MEDICINE

A Series of Lectures in progress during the Winter Session at King's College Hospital Medical School

XV.—THE PREVENTION OF TUBERCULOSIS

In spite of the fact that Galen (A.D. 130–201) recognised the infective nature of the disease and sanitary edicts of the eighteenth century in Spain and Italy enforced isolation of consumptives, medical opinion in the first half of the nineteenth century explained tuberculosis as the manifestation of a special constitution or diathesis. In the classical lectures on the Principles and Practice of Physic delivered at King's College, London, in 1836–1837 to your predecessors, Sir Thomas Watson said :—

"Is phthisis *contagious?* No: I verily believe it is not A diathesis is not communicable from person to person. Neither can the disease be easily (if at all) generated in a sound constitution. Nor is it ever imparted, in my opinion, even by one scrofulous individual to another. . . . The disorder, I am satisfied does not spread by contagion."

When so eminent an authority pronounced these views, it is not surprising that consumption was rife in military barracks and overcrowded institutions, and that whole families often perished from it. The treatment of the case—blood-letting, light diets, closed windows, and overheated rooms—encouraged the progress of the disease and favoured infection to others. I emphasise these points because the memory of man is short and it is too soon forgotten how fatal and widespread a disease tuberculosis was in the past, occasionally flaring up in closed communities even in epidemic form.

Koch discovered the tubercle bacillus in 1882, and without this knowledge anti-tuberculosis measures could hardly have attained the success they have achieved. It is often loosely said that we are all tuberculous, meaning that we have all at some time or other in our lives been infected by the bacillus. The prevalence of infection by the tubercle bacillus varies, however, in different communities. It is high in some cities (e.g., Vienna) and low in others (e.g., Toronto). It is usually higher in urban than in rural communities. Whether or no the infected person suffers from tuberculous disease depends upon a variety of circumstances. By many authorities the size of the infecting dose is regarded as of paramount importance. The work of the Royal Commission on Tuberculosis demonstrated this in animal experiments. The demonstration in man is less practicable because man is often more resistant to the tubercle bacillus than the experimental animal, the questions of latency and reactivation of tuberculosis claim consideration, and modern hygienic conditions and precautions limit the infecting doses. It is, however, now generally accepted that measures calculated to diminish the risk of personal infection in the community are of importance in the prevention of tuberculosis.

The Paths of Infection

As you are well aware, tuberculosis may affect almost any organ or tissue of the body, but invasion of the lungs is so frequent and so serious that it is convenient to classify the disease into the two forms, pulmonary and non-pulmonary. The skin, although affected, as in lupus, is not a favourable region of the body for penetration and multiplication of tubercle bacilli. The mucous membrane lining the interior of the body provides the usual path of entry for these organisms.

Tuberculous infection may occur (1) by the inhalation of wet or dried particles of expectoration given off from a patient suffering from pulmonary tuberculosis, or (2) by the ingestion of tuberculous milk or of other foods tuberculous in character or contaminated by tubercle bacilli. Discharges from tuberculous patients, other than tuberculous spray or sputum, such as intestinal discharges, pus from tuberculous abscesses and the urine, are potentially infective, but the main source of infection is inhalation of tubercle bacilli in particles of expectoration.

Human and Bovine Tuberculosis

Of the three main types of the tubercle bacillus (1) the human type, is pathogenic to man and less pathogenic to animals; (2) the bovine type, is pathogenic to both animals and man; (3) the avian is apparently non-pathogenic to man.

The human type is the cause of nearly all cases of pulmonary tuberculosis, while according to Stanley Griffith at least 5 per cent. of human tuberculosis is due to the bovine type. It has recently been shown that bovine pulmonary tuberculosis exists both in Scotland (W. T. Munro and S. Griffith) and in England (W. M. Cumming and W. M. Foster) and its identification is thus of significance in diagnosis, prognosis, and epidemiology. But the chief cause of pulmonary tuberculosis in man is the human type of bacillus, the route of infection being through the air-passages.

The bovine type of bacillus conveyed in milk is mainly responsible for the infection of man through the intestinal tract. Human tubercle bacilli—e.g., through the hands of a consumptive milker—may occasionally contaminate milk and give rise to tuberculosis through the intestinal path, but this is exceptional.

Non-pulmonary tuberculosis may be due either to the human type or to the bovine type. Griffith has prepared a table showing the proportion of bovine to human infections in different varieties of tuberculosis in some 1300 patients of different ages. It is of interest to note from this table that tuberculosis of the cervical glands is appreciably a bovine as well as a human infection and that the higher proportion of bone and joint infections is of human origin.

Sources of Infection

WET AND DRIED EXPECTORATION

In ordinary quiet breathing, air expired by a consumptive is probably free from tubercle bacilli, but experiments made by Heymann and others show that the spray during coughing or sneezing may convey infective particles some little distance (about three feet) through the air. Spray infection is undoubtedly dangerous in the close intimacy of home-life, and in crowded and inadequately ventilated workshops and offices; protection against it can be secured by the avoidance of near proximity to a coughing patient and the use by the latter of a handkerchief when coughing or sneezing. The dust of railway carriages, omnibuses, and tramcars frequently has been found to contain tubercle bacilli, but in institutions for the reception of consumptives, where the risk of dust infection is appreciated, samples of dust collected are usually free from tubercle bacilli.

Fortunately, certain conditions minimise the amount of infection by spray and dust. Many persons never come in contact with a patient in an advanced stage, from whom the greatest risk is to be anticipated. A

consumptive patient may not be infective, that is, he has no cough and no sputum, while often the sputum contains tubercle bacilli only for a certain period of the illness. Again, a large number of the tubercle bacilli, which remain alive in wet dust and wet sputum, die when exposed to fresh air and sunlight.

The main preventive measure against infection from this source has been an educated public opinion. At the dispensary and still more effectually in the sanatorium the consumptive is trained to use a sputum flask, and the social discouragement of indiscriminate expectoration must be a potent factor in lessening spray and dust infection.

INGESTION OF TUBERCULOUS MILK AND OTHER FOODS

Second only to inhalation of tubercle bacilli into the lung as a cause of tuberculosis is the ingestion of tuberculous milk or meat. It is estimated that not less than 40 per cent. of the cows giving milk in England are infected with tuberculosis, and probably between 1 and 2 per cent. of milch cows actually yield tuberculous milk. The prevention of bovine tuberculosis has to be considered from two standpoints: (1) the control and possible eradication of tuberculosis in the herds of this country and particularly dairy herds; (2) the prevention of the spread of the disease to human beings.

As regards (1), considerable progress has been made in recent years. Tuberculosis can be detected in bovines by means of the tuberculin test. Of the three forms of this test used for cattle, the Tuberculin Committee of the Medical Research Council reported in 1925 that the ophthalmic test had been found unreliable and that under ordinary field conditions the subcutaneous test gave inconsistent results. They devised a modification of the intradermal test, known as the double intradermal test, which has now been made compulsory for the testing of certified herds and has passed into almost universal use by veterinary practitioners. By this method bovine tuberculosis in herds can be readily detected.

Bang in Denmark first brought into prominence a method of eradicating tuberculosis from herds which has been extensively and successfully used in America. After tuberculin testing, reactors are removed from the herds and slaughtered, substantial compensation being paid to the stock owners. The cost of this method is enormous. In this country the problem is being attacked by more practicable methods. L. Jordan's report to the Medical Research Council demonstrates the success of an experimental investigation in the eradication of bovine tuberculosis from a selected area in Ayrshire, and W. G. Savage in his Mitchell lecture last year discussed other measures of eradication.

Another method which is being studied is vaccination against tuberculosis. J. B. Buxton and S. Griffith at Cambridge are investigating the efficacy of immunisation of calves by B C G (Calmette's attentuated living vaccine) and other antigens. Investigations are also proceeding into the incidence of tubercle bacilli in pastures, the part they play in infecting herds, and possible measures of eradication.

As regards (2), the prevention of the spread of the disease to human beings, the diminution in non-pulmonary tuberculosis is encouraging. In 1919 the deaths from non-pulmonary tuberculosis (a certain proportion of which were due to bovine infection) were 10,328; in 1929 these deaths had fallen to 6565. Part of the improvement must be attributed to a safer milk-supply. The inspection of herds, farms, dairies and milk, distributing centres, the bacteriological testing of samples of milk for tubercle bacilli, and the increasing attention paid to the pasteurisation of milk, are measures which have been described by Dr. J. M. Hamil in a previous lecture in this series; all of them must materially contribute to the diminishing incidence of non-pulmonary tuberculosis in the human subject.

It is improbable that tuberculosis is conveyed through the consumption of the meat of infected animals to any great extent, for the reduction in mortality has been very marked during the age-periods in which meat is most largely consumed and has been coincident in point of time (1851–1910) with a large increase in the general consumption of meat in this country. The cooking of meat is an additional safeguard.

When milk contains tubercle bacilli, cream, butter, cheese, skimmed milk, and buttermilk prepared from it are infective. Margarine blended with tuberculous milk may also be a source of danger.

OTHER MODES OF INFECTION

Other possible modes of infection are generally held to play only a minor part in the dissemination of tuberculosis. Lupus vulgaris is probably caused by accidental inoculation of the skin with tubercle bacilli. Local tuberculosis is occasionally but rarely seen in butchers, in milkers, and in pathologists following autopsies on tuberculous subjects. Rarer still must be such sources of infection as contamination of the hands with tubercle bacilli, infection by saliva, or through the agency of flies.

Individual Characteristics and Circumstances

Heredity.—Clinical experience and post-mortem evidence do not support direct prenatal transmission from parent to offspring of tubercle bacilli except on the hypothesis that the infection lies latent in the newly born. It is doubtful whether the offspring of tuberculous parents inherit a special predisposition or susceptibility. Certain physicians believe in the existence of an hereditary tuberculous diathesis, but clear evidence of heredity is difficult to obtain in a disease which is infective and prevalent. Equally obscure is the influence of race, for racial habits and the environment and occupational conditions associated with individual infection complicate the issue.

Inter-conjugal infection has been much discussed. A. J. Scott Pinchin investigated the histories of 166 married couples on the Hampstead Dispensary register and found that in 38·5 per cent. of them infection had probably been passed from one partner to the other. He concludes that marital infection is more common than is generally supposed, but that in a large number of instances the infection is benign. *Pregnancy* frequently aggravates tuberculosis, if already active, or calls into activity a latent focus of disease. This is also true of prolonged lactation. There are no exceptions to the rule that a mother suffering from advanced tuberculosis must be forbidden to nurse her child both for her own sake and for that of the child. There is a possible danger that tubercle bacilli may be transferred in the mother's milk to the infant, although, obviously, the chief risk is by spray infection.

Family infection.—A patient with advanced pulmonary tuberculosis may infect members of his family. Both clinical impressions and statistics go to show that the incidence of tuberculous morbidity and mortality is much greater among the contacts of open infective cases of pulmonary tuberculosis than it is in the general population. The clinical examination of contacts is a powerful weapon of prevention, not only because such examination may detect an early case

which might otherwise have escaped recognition and effective treatment, but also because it may reveal the primary infective case in a household, whose segregation may prevent further spread.

Mortality of Tuberculosis in Relation to Age and Sex

For the age-period between 5 and 45 years of age tuberculosis is to-day the chief fatal disease. Towards the end of childhood and in young adult life approximately one-third of the deaths from all causes among males and almost one-half of the deaths from all causes among females are due to tuberculosis, chiefly of the pulmonary form. This rise in mortality in young adult females dates only from the beginning of this century, and may be associated with the more strenuous and less sheltered life now led by young women. Uninstructed and defective nutrition may also play its part. After middle age mortality from tuberculosis is much greater among males than among females.

Urban and Rural Environment

Mortality from both pulmonary and non-pulmonary tuberculosis is higher at practically all ages and in both sexes in urban than in rural areas. This does not justify a conclusion that the rural population is less susceptible to tuberculosis. Among them opportunities for the transmission of infection are less frequent, the general environment is healthier, and the occupational conditions are less liable to increase the mortality from tuberculosis.

Conditions and Diseases Diminishing Resistance

Fatigue; injury.—Physical over-exertion is often responsible for determining the onset of pulmonary tuberculosis, and trauma may be followed by local tuberculosis.

Malnutrition and poverty.—The two factors nutrition and social well-being are interdependent and can hardly be dissociated. When food is cheap and wages are high there are said to be fewer deaths from tuberculosis; when poverty prevails there is a higher death-rate. War conditions associated with malnutrition or semi-starvation favour tuberculous infection and many examples of this could be cited from countries invaded or stricken in the Great War. There is abundant evidence that malnutrition favours tuberculosis, but underfeeding is usually associated with other conditions encouraging the disease, such as overcrowding, bad sanitary conditions, and familial infection which also play their part.

OTHER DISEASES FAVOURING TUBERCULOSIS

The general effects of other diseases in favouring tuberculosis, so far as is known at present, appear to be included in the following four categories:—

(1) Catarrhs and inflammations of the smaller air-passages and of the lungs (bronchitis, pneumonia, measles, scarlet fever, whooping-cough, influenza) may cause damage locally by denudation of epithelium, retained secretions, and inflammatory products, and thus afford opportunity for the entrance and lodgment of tubercle bacilli.

(2) Much more frequently, however, these inflammatory conditions would appear to bring a latent, inactive focus of tuberculosis, usually in the bronchial glands, into activity.

(3) Deformities of the chest, whether congenital or brought about by rickets or intrathoracic inflammation or injury, hamper respiratory movements and so render the expulsion of tubercle bacilli more difficult while at the same time favouring their development.

(4) Chronic diseases, such as diabetes, chronic gastric and intestinal affections, anæmia, chlorosis, blood diseases, extreme debility following severe affections (typhus, rheumatic fever, malaria), advanced nervous disease, syphilis, insanity, alcoholism, and so forth, provided that there is sufficient exposure to infection, induce a general predisposition to tuberculosis by lowering resistance either of individual organs or throughout the body.

External Conditions Favouring Infection

OVERCROWDING AND INSUFFICIENT VENTILATION

The influence of foul air and "overcrowding" was first demonstrated in districts where all the houses were built on the vicious system known as "back-to-back."

One example may suffice of the close association between overcrowding and pulmonary tuberculosis. Examination of the figures of a large town where considerable overcrowding exists showed that the incidence-rates of pulmonary tuberculosis in 1929 for the population occupying homes of the various sizes was as follows:—

	Incidence-rate per 1000.
Persons occupying 1 room	4·4
,, ,, 2 rooms	3·4
,, ,, 3 ,, . ..	2·3
,, ,, 4 ,, ...	2·2
,, ,, over 4 rooms ..	1·3
All persons living in dwelling-houses ..	2·6

These figures, while indicating a relationship between the amount of overcrowding and pulmonary tuberculosis, do not suffice to show whether the overcrowding caused pulmonary tuberculosis, or whether the disease by adding to family expenditure or by diminishing the wage-earning capacity, left less money available for rent and thus brought about the overcrowding, or whether again overcrowding is associated with some other condition or conditions which are favourable to disease. In all probability, all these circumstances play their part.

Another difficulty in dealing with statistics on this subject is the frequent changes of house among the poor; the house in which a patient dies of pulmonary tuberculosis is not necessarily the house in which the disease was acquired, yet, generally, foul air and bad housing are accompanied by increased mortality from pulmonary tuberculosis. The campaign against the slums and the better housing of the people will, indubitably, play their part in diminishing the potentialities for tuberculous infection.

INDUSTRIAL INFECTIONS

Certain industries which involve the inspiration of special forms of mineral dust—e.g., metal mining, the quarrying and dressing of granite, sandstone, millstone, and flint, the refractories industry and sandblasting—are characterised by the incidence of a special form of pulmonary fibrosis known as *silicosis* among the workers. The tendency of silicosis to advance is singularly uniform and the culmination, if it proceeds to its terminal stage, takes the form of obvious active tuberculosis in the silicotic lung. These cases seem to be of low infectivity, the number of positive contacts from them being few as compared with contacts from patients with simple pulmonary tuberculosis. Under the Home Office arrangements are in force for the diagnosis, notification, and control of silicosis with compensation to the workers who have acquired the disease.

Asbestos workers also contract a form of fibrosis of the lungs on which pulmonary tuberculosis may be grafted. In addition there are a number of other industrial occupations—e.g., printers—in which the incidence of tuberculosis is high. It is low among medical practitioners.

Measures for the Prevention of Tuberculosis

In reviewing the many causes of tuberculosis, certain preventive measures have already been discussed or are so obvious that the cause suggests

the remedy. The campaign against tuberculosis must not be regarded as an isolated subject. It is an integral part of public health and every measure calculated to promote the health and well-being of the community is a contribution towards it. The methods of attack must be comprehensive, various, and coördinated. They can be grouped into general and particular measures.

GENERAL MEASURES

1. *Measures directed towards the health and improvement of the nation generally.*—As examples may be quoted :—

Educational measures such as the teaching of hygiene in the schools; the provision of open spaces in towns; opportunities for physical exercises and recreation; playgrounds; general sanitation; a pure milk-supply; housing provision; improved nutrition; for example, a price for wheat within the means of every worker and meals for school-children; protection of the individual defences—e.g., medical inspection and examination of school-children, child welfare, hygienic conditions in workshops and factories; the avoidance of undue fatigue and of alcoholic excess.

2. *Measures directed against the conditions and diseases favouring tuberculous infection.*—Under this heading are included :—

Provision of medical and nursing aid; health-visiting; the combating of juvenile disease, especially measles, whooping-cough, and rickets; school clinics; hospitals; the campaign against venereal diseases; expansion and coördination of public health measures against disease; midwifery services; antenatal and postnatal work; sociological work. All measures directed towards the elimination of poverty and the amelioration of social conditions influence tuberculosis which has often been described as "the disease of poverty."

Amongst the general measures mentioned above, the importance of education may be emphasised. Without creating undue alarm, the attention of the public should be directed to tuberculosis as a preventable disease, and to the urgency of measures to this end. Information should be disseminated on general domestic and personal hygiene, and on factors which maintain a high incidence of tuberculosis; on the facilities available for diagnosis and treatment; on the dangers of indiscriminate expectoration, of overcrowding, and of other unhygienic conditions of the home or workshop. The public should be made to realise the vital importance of seeking skilled advice *early*, and of accepting treatment at once, instead of waiting until the disease has affected their working capacity. If the advice of the tuberculosis officer were claimed at the onset of slight illness, many cases of tuberculosis would come under treatment at a stage when a successful issue could be anticipated. The educational work of the National Association for the Prevention of Tuberculosis has been of value in supplementing the instruction given by the officers of local authorities, and in Wales the educational side has been well developed by the Welsh National Memorial Association in its comprehensive tuberculosis scheme.

HOW THE PRACTITIONER CAN HELP

General practitioners must play a leading rôle in the prevention of tuberculosis. No scheme of anti-tuberculosis measures adopted by a local authority can be successful without the full coöperation of the practitioners in the area. In the introductory lecture in this course Sir George Newman directed attention to this matter and informed you that the question of special instruction in tuberculosis for medical students was engaging the consideration of the General Medical Council.

It must be recognised that the clinical diagnosis of tuberculosis in its early stages is exceedingly difficult; even for the expert it may require a period of close observation under specially favourable conditions, and preferably in a residential institution. The private doctor therefore should not hesitate to refer to the tuberculosis officer not only those cases in which indubitable signs of tuberculosis are already present, but also patients who show any symptoms which may suggest the probability of early tuberculosis. A practitioner fails in his duty if he continues to treat cases of prolonged debility or those suffering from bronchitis or recurring "colds" or pleurisy without having the most searching examination made to exclude tuberculosis. The diagnostic machinery provided by local authorities should be used to a much greater extent.

The major part of the life of many a consumptive will be spent in residence at his own home and under domiciliary treatment. The general practitioner must therefore be prepared to advise and encourage the patient to regulate the routine and conditions of his life. Consultations between the tuberculosis officer and the general practitioner should ensure that the guidance given to patients is not conflicting and that every advance in the specialised treatment of tuberculosis shall be available for them.

The *school medical officer* also plays an important part, since the presence of early tuberculosis in the child is detected, partly, by the tuberculosis officer's examination of child-contacts, but, mainly, by his examination of school-children referred to him for an opinion by the school medical officer.

PARTICULAR MEASURES

It is desirable that a complete scheme for the prevention and treatment of tuberculosis should include the following provisions :—

1. *Staff.*—(*a*) The county or county borough medical officer of health as administrator and organiser of the scheme; (*b*) the tuberculosis officer; (*c*) the health-visiting and nursing staff.

2. *The dispensary.*

3. *Institutions for the treatment of tuberculosis.*—These should include :

(A) *Institutions for the treatment of pulmonary tuberculosis.*—(1) the sanatorium; (2) the hospital. When practicable (1) and (2) should be included in (3) the combined institution for treatment, occupational therapy, and employment (hospital, sanatorium, training colony, village settlement) (4) the home for advanced cases.

(B) *Institutions for the treatment of tuberculosis in children.*—Children's sanatoria.

(C) *Institutions for special forms of tuberculosis.*—(1) for surgical tuberculosis (in connexion preferably with a comprehensive orthopædic scheme); (2) hospitals for other special forms of tuberculosis (lupus, scrofulodermia, genito-urinary tuberculosis).

(D) *Arrangements with general hospitals or special clinics for differential diagnosis and for the treatment of complications.*

(E) *Institutions and arrangements for training and after-care.*—(1) technical training sanatoria for adolescents; (2) industrial centres—residential and non-residential; (3) the village settlement; (4) the care committee.

It would be neither the most effective nor the most economical method for each county and county borough council to make independent provision for each of these needs. Certain of the provisions can be made more satisfactorily and economically by a combination of authorities or by making special arrangements with institutions already existing outside the area of a particular authority.

The Ministry of Health

The Ministry of Health in its relations towards the tuberculosis work of local authorities is an advisory and supervisory body. It has a special medical department closely concerned with tuberculosis which is in close association with a number of branches of public medicine and poor-law administration assembled under the Ministry. It is linked up with the tuberculosis work of the Medical Research Council and with the medical services of the Board of Education.

The Ministry assists local authorities by acting as a bureau of information upon tuberculosis work and progress, by advising the local authorities upon the development and condition of their work, and by local inspections.

Growth of Tuberculosis Schemes

It is of interest to note the growth to which tuberculosis schemes have attained in England. On Dec. 31st, 1932, tuberculosis work was being done in 462 dispensaries. There were 380–390 tuberculosis officers whole-time or part-time, and about 510 residential institutions (26,779 beds) were approved by the Ministry of Health for the treatment of tuberculosis. In addition, 2647 beds were specially allocated for the treatment of tuberculosis in poor-law hospitals and institutions, making a grand total of 29,426 beds. The use made of this provision during the year 1932 may be summarised as follows :—

95,000 persons suffering or suspected to be suffering from tuberculosis and 48,531 contacts were examined for the first time during the year by tuberculosis officers. At the end of the year, 205,037 persons were under the supervision of the dispensary services. 5521 persons were admitted during the year under tuberculosis services to residential institutions for observation with a view to diagnosis and 49,351 for treatment. In addition, 7764 patients were admitted to poor-law institutions and hospitals for treatment.

Conclusion

I trust that in describing the trees I have not prevented you from seeing the tuberculosis wood. It is an extensive forest and we have had to pass hurriedly by many fine plantations. The time has not sufficed to allude even to the mass of research work dealing with the prevention and treatment of tuberculosis or to the modern work on collapse-therapy and surgical treatment which are not only therapeutic but also preventive measures, for they diminish the risk of infection—or, again, to the modern treatment of laryngeal tuberculosis which has been so successful, largely as a result of Sir StClair Thomson's investigations. At all events, you will have recognised how complex a problem is the prevention of tuberculosis and how extensive are the various agencies employed in the work.

Statistics show that all forms of tuberculosis are declining in our midst. In 1911, immediately prior to the setting-up of the national scheme for combating tuberculosis, there were 38,422 deaths, and in 1932 only 27,627 deaths from tuberculosis of the respiratory system. The diminution in the deaths from other forms of tuberculosis within the same period is remarkable. In 1911 these deaths were 14,698; in 1932 they had fallen to 6031. These diminishing figures year by year afford great encouragement to antituberculosis work.

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SPECIAL ARTICLES

HEALTH AND DISEASE IN THE ARMY

THE figures of illness in the director-general's report[1] show that the improvement of recent years is maintained. Apart from injuries, the chief cause of death was pneumonia; the men have three times as many cases as the wives who accompany them, and five times the mortality. On the other hand the women have about as many cases of tubercle of the lung as the men. Something of the same sort was noticeable in 1931. The chief cause of invaliding was tubercle, as usual; next to it came disease of the ear, which had already kept more intending recruits out of the army than had any other pathological condition, for it excluded rather over 5 per cent. of all candidates. But the invaliding from this cause is less this year.

Immunisation against diphtheria gives satisfaction, but it is difficult to get parents to require it for their children unless there is an epidemic in the neighbourhood. There was but one death from dysentery, acute bacillary, and that at Shanghai. Throughout the army the bacillary cases were four times as many as the amœbic. Of the 218 cases of enteric fever only one set of cases (18 at Lahore) was grouped; the rest were sporadic. Of men going abroad, 97·5 per cent. were already protected by inoculation. The examination of all men involved in food-handling in the last five years in India has discovered few cases of dysentery, and no carriers at all. It has moreover been associated with no appreciable decrease in the total figures for dysentery and diarrhœa, and the policy is to be changed; food-handlers when attacked will report sick and have no excuse for concealing their condition.

Malaria among British troops decreased in India from 112·5 cases per 1000 in 1931 to 84·1 per 1000 in 1932, due (it is suggested on p. 101) to plasmoquine; but antimalarial work goes on, though it is complained that funds are hard to get. In Table 53 (on p. 99) are set out all the 29,045 malarial cases seen in the last five years. Of these, 56·6 per cent. were primary cases (36·6 per cent. identified as benign, 14·5 per cent. as malignant tertian) and 43·4 per cent. relapses (nearly all benign tertian). A word of hope comes from Poona (p. 109) where "the medical authorities obtained the active coöperation of the whole garrison, and the result was an outstanding success." A large valley (nullah), for years a source of mischief, was told off in sections, each assigned to a combatant unit. Competition was awaked, and "excellent progress was made with the canalisation and grassing of this nullah, progress quite beyond the unaided powers of the station anti-malaria organisation." If successful in Poona, why not elsewhere? It employs the men, increases their comfort, and keeps them out of the bazaar, of itself a good thing for their health. Much is said about plasmoquine and atebrin, which gave satisfaction at once, but another year's experience will make the clinical judgment upon them clearer.

Unusual cases were poliomyelitis attacking young officers in Egypt, advanced carcinoma of the stomach in a recruit of 19, and a case of pulmonary blasto-

[1] The Health of the Army in 1932. Report by Lieut.-General Sir Harold Fawcus, director-general, Army Medical Services. H.M. Stationery Office. 1934. Pp. 155. 2s. 6d.

mycosis. Now that improved facilities have been provided in operating rooms and equipment in India, as well as radiological apparatus, it is rarely that patients need be invalided to England for treatment. Cases of appendicitis are again more numerous; the operative mortality at home and abroad is stated at 0·53 per cent., and almost the same (0·54) in military families' hospitals. Genito-urinary operations were 292, "excluding minor operations such as circumcision." Operations for internal derangement of the knee-joint are considered very useful if not delayed till the ligaments become weakened; in an Indian station, 15 of these cases were viewed, of whom 14 "exercise full athletic activity." Treatment of trachoma has so much improved that mild trachoma is now no bar to enlistment.

In India piped water-supplies are being provided in many cantonments, also plunge and swimming baths. Refrigerators are being experimented with at Rasmak and Wana in the extremest north-west. Late dinner for troops in hot weather has, we are told, many advocates, but has not yet been adopted generally. Scurvy is prevented by the use of germinating pulse, which when raw is unpalatable, but the expressed juice can be made into a palatable drink which it is hoped to use in the field. Barracks are being improved where possible; the most vexatious trouble is infestation of old barracks with bugs. They are not known to carry disease, but they lower self-respect. At Gibraltar ants are said to destroy bugs, but it is difficult to find suitable ants.

A joint committee has been considering the incidence of tonsillitis in the schools of the three services. The R.A.F. were thought to have the best dormitories, the Navy the best food, but the Army boys grew best. The committee continues its work. The pathological section is aiming at a new and more effective antityphoid vaccine. A new "Leishman" laboratory was opened at Aldershot by Lady Leishman, and another was opened at Catterick. Seventy per cent. of recruits have their oral hygiene noted as "fair" or above when they join. Special attention is being devoted to the combined treatment of maxillo-facial injuries by surgeons and dentists together. The account (on pp. 51, 52) of a fracture of the right maxilla, treated successfully with "excellent dental result" and evidence of "both nares good airway," shows what may be done with skill and patience.

Advantage was taken of the experience and equipment of the health departments of Kensington and Battersea to inform specialist officers under training of their systems of antenatal and infant welfare, electrotherapy, and swimming bath organisation.

MEDICINE AND THE LAW

Alleged Premature Release of Lunatic

THE Ministry of Health announced last week the result of its inquiry into the case of Joseph Millard, who was found "guilty but insane" at Birmingham Assizes before Christmas on the charge of having murdered his wife and three children. The Commissioner of Assize commented somewhat severely at the trial upon the fact that Millard had apparently been discharged from a mental hospital at his wife's request within a few days of having been confined "as a raving lunatic" in a padded cell. Witnesses gave evidence that Millard had been regularly employed as a golf caddie, in which capacity his conduct had been normal and satisfactory. He was afterwards put on a relief work scheme and protested that he was being made to do navvy's work for which he was quite unfit. He was sent for examination to the Dudley Road hospital at Birmingham, and was transferred thence to Erdington House mental hospital for mental observation, where he remained a week. He attacked an attendant. Sedative drugs were tried but did not have the desired effect. He was then placed in a padded room for 24 hours on Oct. 21st and 22nd. On the latter date Millard's wife came to the hospital and asked for her husband but was not allowed to see him; she then said she wanted him out at once; "You people think my husband is mental, but I know there is nothing wrong with him; he is all right and I want to take him home." The master of the house stated at the inquiry that a patient was never discharged from a mental ward without a recommendation from the doctor. Millard's wife requested her husband's discharge on two days; in the end Millard was discharged at his own request. The master had seen nothing to justify Millard's detention. If a man asked to go, he could not be detained unless a doctor gave an order. If in the absence of an order a man took his discharge against the doctor's advice, he had to sign a responsibility book which stated that he acted against that advice. The doctor in charge of the ward took full responsibility for signing the report that Millard was fit to be discharged; in his opinion Millard was not insane but had all along been a malingerer. He could not have certified him insane. Millard was released on Oct. 22nd and committed the murders a month later.

The inquiry was conducted by Mr. H. K. Nisbett, chief inspector for the Ministry of Health in the Midlands, assisted by Dr. Rees Thomas, a Commissioner of the Board of Control. The findings are that Millard, while at the two Birmingham hospitals, appeared to make a rapid recovery from an acute attack of mental illness in which he received appropriate care and attention. There was a second attack more than three weeks later; no mental symptoms were observed in the interval which would justify committal to a hospital. The circumstances of Millard's discharge had nothing to do with the murders committed a month later. The Minister concurs in these findings: they seem to dispose of the general allegations of impropriety to which the Commissioner of Assize gave currency. The Minister, however, refers to Millard's seclusion in a padded room five days before his discharge. This might have been proper if Millard had been certified under the Lunacy Act, but there was no authority for such seclusion of a patient not of unsound mind. The Minister appreciates the explanation that the irregular seclusion of Millard was apparently due to the non-equipment of the hospital with any other facilities for isolating a patient in his own interests or to avoid disturbing other patients. The Minister asks that early consideration be given to an improvement in this respect. He suggests that the doctor in charge of the ward would have done well to have specially notified his superior officer on finding such a step necessary. It may perhaps be added that counsel at the inquiry, on behalf of the medical superintendent of Erdington House and the doctor in charge of the ward, reminded the inspector of the risks run by a doctor in certification under the Lunacy Act; they suggested that the trouble had been due to the anxiety of the present lunacy laws to prevent any sort of wrongful detention.

Mania after Operation

At an inquest at Hanwell Mental Hospital last month the jury returned a verdict that death was due to exhaustion from mania arising from an operation for hernia. The deceased was a railwayman who had injured himself in lifting a heavy box in the course of his work. He was found to be suffering from hernia and was operated upon on Jan. 2nd. According to evidence at the inquest he had previously shown no mental abnormality or instability, nor was there any insanity in his family. On the 13th, when admitted to Hanwell, he was found to be in a state of acute mania, extremely restless, refusing to be kept in bed, and declining all food. It was necessary to nurse him in a padded room. Suffering a little at first from bronchitis, he became progressively weaker, broncho-pneumonia developed, and he died on Jan 16th. Dr. Retallack-Moloney, senior medical officer at Hanwell, was asked by the coroner what set up the mania. He stated that, in view of the history of the case, he had no doubt it was due to the operation and the anæsthetic. Such a case was very rare but he had known of one other.

IRELAND

(FROM OUR OWN CORRESPONDENT)

THE IRISH HOSPITAL PROBLEM

AT the annual dinner of the Royal College of Surgeons in Ireland (reported on another page), Mr. Frank Chetwode Crawley, the president, in his speech gave attention to the hospital problem of the Irish Free State. He pointed out that the economic unit for a general hospital was generally regarded as being in the neighbourhood of 500 beds, whereas most of the hospitals in Dublin had from 120 to 160 beds. It was impossible to hope that such small hospitals could all be adequately equipped, and he believed that if three of the smaller hospitals were amalgamated an efficient institution of economic size could be established. In contemplating a new hospital there must be provision for private beds. The general public was becoming awake to the advantage of being treated where there was adequate modern equipment for diagnosis and treatment. Mr. Crawley also discussed the proposed building of a large number of small hospitals throughout the country. There were many excellent physicians and surgeons in the smaller towns of Ireland, but no one looking at the trend of modern medicine, the expensive mechanical equipment of a modern hospital, the large number of trained medical men, the large number of trained assistants necessary to carry out the work, could hope to equip and staff a hospital in a small country town so as to fulfil the standard of a modern hospital. If they were to have a number of small hospitals scattered through the country they should be of the cottage hospital type. The full potentiality of modern transport was not yet realised in Ireland, and the president drew attention to the development of air transport for the sick in regard to the islands of Scotland. There is no doubt, as he suggested, a danger of the country hospitals in Ireland attempting more than they can have reasonable hope of performing, but they need much, both in the way of new buildings and in equipment, before they are really fit for what is their proper duty.

THE PROPOSED ECONOMIES

The Temporary Economies (or "Cuts") Bill was under discussion in committee in the Dáil this week when several important amendments were considered. One amendment, put forward at the request of the Irish Medical Committee, proposed to exclude medical officers from the purview of the Bill. Another proposed to make the Bill applicable at the option of each local authority in its own area. It is worthy of note that several local authorities—including the corporations of Dublin, Drogheda, and Waterford—have expressed disapproval of the Bill, and asked that it should be withdrawn.

TWO NEW BILLS

The Minister for Local Government and Public Health last week introduced two Bills of considerable interest to those interested in questions of health. The Children Bill amends the Children Act of 1908 in several particulars. The Minister proposes to take extended powers in respect of the control and supervision of all institutions where children are kept. The control will continue up to the age of 9 years instead of the age of 7 at present. Persons undertaking the care of children for gain must comply with very rigid conditions. Instead of reporting the reception of a child to the local authority after the child has been received, notice must in future be given 48 hours in advance. Notice of removal of a child must be given within 24 hours. Illegitimate children will be deemed to be kept for reward until the contrary is proved.

By the Registration of Maternity Homes Bill it is provided that all private maternity homes must be licensed by the local authority. The authority must be satisfied as to the character and competence of the person who applies for a licence. The home will be subject to inspection, and careful records must be kept. In moving the second reading, Dr. Ward, Parliamentary Secretary, stated that the Bill was intended to render effective one of the recommendations of the Commission on the Relief of the Sick and Poor. He quoted from the report of the commission to the effect that the mortality among illegitimate children was about five times as great as among legitimate.

PARIS

(FROM OUR OWN CORRESPONDENT)

UNKNOWN CAUSES OF DEATH

Mr. Marcel Moine, statistician to the National Anti-Tuberculosis Committee and to the Office National d'Hygiène Sociale, is the voice of the bad conscience of public health administration in France. His figures, published in a recent issue of the *Siècle Médical*, show that, while the notification of the causes of death has lately become much more effective, there is still much room for improvement. In 1925 the causes of 26·6 per cent. of all the 707,816 deaths were not ascertained. In 1930 this percentage was reduced to 12·6, an improvement wonderful at first sight but partly explained by an item in the list, viz., "other diseases," which simple folk would find it hard to distinguish from unknown causes. There are also the deaths from "chronic bronchitis" in quite young persons and from senile decay in persons under 50. As long as the notification of pulmonary tuberculosis is not compulsory, and the principles of professional secrecy are maintained both by the law and by the medical profession, there is little prospect of this disease ceasing to masquerade as chronic bronchitis both before and after death. The local differences in registration are great. In the

department of the Seine the cause of every death is known, at any rate on paper, whereas in the department of Lozère 55 per cent. of the deaths are due to unknown causes and only 38 per cent. are testified to by a doctor. In one department in the south-east of France 99 per cent. of the deaths are, indeed, testified to by a doctor, but a specific cause of death is indicated in only 68 per cent. Doctors, it would seem, are not the only members of the community capable of stating why persons have died. In the Haute-Savoie, for example, only 42 per cent. of the deaths were testified to by a doctor, but 89 per cent. were given a specific label. Mr. Moine calls the collaboration of these non-medical diagnosticians "clandestine." If the figure of 12·6 per cent. is accepted as accurate and the cause of 81,872 deaths was unascertained in 1930, the figures can be handled so as to show that, with a death-rate of 15·8 per 1000, France has a population of 5,200,000 who will die of some unknown cause.

CORRESPONDENCE

BATTLE OF THE BARBITURATES

To the Editor of THE LANCET

SIR,—In your issue of Feb. 3rd Sir Maurice Craig has referred to my remarks at the discussion at the joint meeting of the sections of therapeutics and psychiatry of the Royal Society of Medicine on Dec. 12th, 1933.

He first of all criticises my warning that the barbituric acid derivatives have a powerful action on the brain and central nervous system and that care is required in the repeated daily use of these drugs. In the interest of truth I am compelled to state facts that are being constantly brought to my personal notice. The repeated daily use of these drugs in therapeutic doses quite commonly causes symptoms such as mental depression, drowsiness, visual hallucinations, vertigo, ataxic gait, indistinct speech, diplopia, squint, nystagmus, paralysis of a limb, facial paralysis, &c. These symptoms have been observed by myself in a considerable number of cases and have become common knowledge. Indeed, the repeated daily use of these drugs may cause a complex of symptoms identical with those occurring in cerebellar disease, postero-lateral sclerosis, encephalitis lethargica, bulbar paralysis, meningitis, and other nervous affections.

Prof. R. Richards, of Aberdeen, has recently sent me notes of three cases taking daily therapeutic doses of barbituric acid compounds where loss of memory and a state of automatism followed the repeated use of these drugs and, as a result, an excessive number of tablets were unconsciously taken at night at short intervals. In each of these cases serious poisoning with coma resulted. The recent case in London where a popular actress fell from an open french window after taking four tablets of quadronox (which contains 80 per cent. of veronal) was no doubt an example of the effect of veronal in causing an automatic state and loss of appreciation of what acts were being performed. In this case the dose of drug taken was not greatly in excess of a therapeutic dose but quite sufficient to lead to the unconscious automatic action of walking out of the window, and so meeting with a fatal accident. In the appendix to my paper read at the Royal Society of Medicine (1927, vol. xx.) on the Clinical and Pathological Effects of Hypnotic Drugs of the Barbituric Acid and Sulphonal Groups, I have given details of five cases of chronic poisoning following the repeated daily use in therapeutic doses of barbituric acid compounds. I can give records of a considerable number of other similar cases.

The animal experiments published by Dr. F. A. Pickworth in 1927 were originally set on foot and undertaken jointly with the late Sir Frederick Mott, who unfortunately died before their publication. Sir Frederick Mott showed me many of the specimens and was of opinion that the experiments fairly represented the action of these drugs on man and that definite pathological changes resulted in the nervous system. I am not an expert in the morbid histology of the nervous system but have great regard and respect for the work and judgment of such an authority as Frederick Mott. However, animal experiments are always open to criticism and for this reason I have ceased to use them as a basis for my warnings. The clinical evidence in human beings of paralytic toxic effects and disorder of function of the central nervous system is incontrovertible and well known.

Fatal poisoning by barbituric acid derivatives is becoming a subject of international importance and steps to prevent deaths from this cause are being considered in America and on the continent. Sir Maurice Craig, in his letter, quotes Dr. Gillespie as having stated that "he found that out of 5147 deaths from suicide in 1931, the last year of the completed records, only 13 resulted from taking barbiturates." This statement is somewhat misleading. To have a true record of the number of cases of "fatal poisoning" one must consider not only suicides but accidental poisoning, since many cases are put under this heading for obvious reasons. The last issue of completed records of the Registrar-General was for 1932 not 1931. The figures for 1932 are 20 suicides, 12 accidental, giving a total of 32 deaths from fatal poisoning. In 1931 the figures are 12 suicides, 12 accidental, giving a total of 24 deaths from fatal poisoning. The record of fatalities only expresses a fraction of the number of cases of dangerous poisoning from barbituric acid drugs, since a large proportion of these cases are saved by prompt medical treatment. During 1933 I have personally seen and treated 18 cases of dangerous poisoning from barbituric acid derivatives. The subjects of this type of poisoning are often persons of culture and education and distinguished in their walks of life. Addiction to this group of drugs is well known to occur, and I have met with a large number of such cases. In my paper of 1927 in a noted case (H. E. T.) of veronal poisoning in which I gave evidence, the mother of the deceased young man said: "He took it first for pneumonia and never could give it up"; "he told me he should never be able to give it up"; "he seemed to lose all self-control when he wanted it." The evidence at the inquests which have recently occurred emphasises the very real existence of addiction to these drugs and the consequent risks. In my experience most of the fatalities from poisoning by the barbiturates occur in people who have been taking the drugs in repeated daily doses. These drugs are hardly ever used as a means of suicide except in persons accustomed to their daily use and effects.

The barbituric acid group of drugs are efficient and certain hypnotics and have their place in therapeutics. I fully admit their value in the treatment of mental disorder, of which Sir Maurice Craig is one of the most eminent authorities. My contention is that the

repeated daily use of the drugs over long periods is dangerous and harmful in some cases, and may lead to alarming nervous symptoms and risk of fatal poisoning from an accidental or purposeful overdose. The risks are so very real that not only the public but the medical profession need a warning as to the possible dangers of this group of drugs, since new derivatives are daily appearing on the market accompanied by glowing statements as to their safety. It is surely advisable in the interests of the safety of the public that these drugs should only be obtained in limited quantity under medical prescription, and that while being taken in repeated doses for insomnia medical supervision should be exercised. I have no desire to prevent or hamper the legitimate use of these drugs, but I cannot too strongly emphasise the dangers which are being incurred at the present time. The frequency of occurrence during the last few weeks of deaths due directly or indirectly to the use of the barbituric acid group of drugs has been the subject of attention in the daily press and has aroused alarm in the public mind. No emphasis of the danger is necessary from me since the facts speak for themselves.

Sir Maurice Craig says that I have no clinical experience of the toxicity in therapeutic doses of these drugs. This is hardly a fair statement and is incorrect, since I see in consultation hundreds of cases yearly who are taking drugs of this group. If proper medical supervision is being exercised, and intervals of discontinuance of the drugs occur at times to prevent cumulative effects, no objection is raised by me. I do not prescribe these drugs myself because I have been greatly impressed by the danger of their possible abuse under present conditions and also for the sake of example to those medical students who follow my teaching.

The safety of the public can be ensured by some modification in the existing Pharmacy Acts, by the medical supervision of persons taking the drugs for insomnia, and by the coöperation of those practising pharmacy, which I have reason to know will be loyally forthcoming.

I am, Sir, yours faithfully,

Welbeck-street, W., Feb. 6th, 1934. W. H. WILLCOX.

To the Editor of THE LANCET

SIR,—We should be grateful to Dr. Ross for insisting on the precise meaning of the word "addiction" in its medical or psycho-pathological sense. A person who takes an aperient every night is not to be regarded as an "addict," nor is one who takes an hypnotic every night, provided that the incentive is not inherent in the drug itself. Over and over again, like most of your other correspondents, I have prescribed a nightly dose of one of the barbiturates to a patient and oftentimes, long after he has passed from my care, learned that he still has occasional recourse to the drug; but are we therefore to regard him as an "addict"?

Some seven or eight years ago I saw in consultation two maiden ladies, sisters, who together constituted a case of *folie à deux* (communicated insanity). The details of their mental symptoms are irrelevant to the present discussion, but they suffered from insomnia and I prescribed a nightly dose of dial (one or one-and-a-half tablets). Some three years later I learned, to my horror at first, that they still continued the drug, one taking three tablets and the other two tablets every night; but it gave them sleep, it made them happy and they were not one penny the worse for it, either metaphorically or literally as it happens, for they do not bear the expense themselves. Under these circumstances I consented to their continuing with the same doses—as they do to the present day. It does not cure their malady, but it makes their lives happy and it has proved unnecessary to increase the dose further. Incidentally one of the patients is hyperthyroid, probably the passive element of the couple, and she has suffered no untoward results; nor indeed has anyone of scores of such cases for whom I have prescribed a barbiturate, although Dr. Mapother regards hyperthyroidism as a danger signal. Personally I regard dial as the best and safest of the lot.

I am not one of those who believe that neuroses can be cured by the use of such drugs; but having regard to the fact that it is the duty of a physician, not only to cure disease and to prolong life, but also to mitigate pain, physical and mental, so far as it may lie within his province, I do feel that it would be a calamity if these functions should become restricted by State interference.

I am, Sir, yours faithfully,

W. H. B. STODDART.

Cavendish-square, W., Feb. 11th, 1934.

To the Editor of THE LANCET

SIR,—Dr. Pickworth tells us that his proofs of greatly increased degradation of nervous tissue, such as he has shown to occur in animals with large doses of hypnotic drugs, demand care in the use of even small doses. All clinicians have already on other grounds been aware for a long time that care was essential in the administration of any drug for any condition. But apart from this laboratory verification of what is a medical truism, it might seem that here we have presented to us a criterion of those drugs which demand special care in their use. You give to an animal fifty times the ordinary dose calculated by the body-weight, and if pathological results ensue, then you know that you are dealing with a drug demanding special care. Unless this is true Dr. Pickworth's argument falls to the ground. Most people ingest daily a certain amount of sodium chloride, and if they took fifty times their usual allowance pathological results would certainly follow—and yet, except in special cases, nobody does and nobody will take any care whatsoever in the use of this salt. Everyone will take as much or as little as he likes.

I cannot think therefore that Sir Maurice Craig has in any way minimised the value of Dr. Pickworth's work. On Dr. Pickworth's own showing, I think it would be impossible to do so. He has afforded no proof of any kind that any degree of degradation of the nervous system results from the administration of normal doses of the barbiturates, yet in the last sentence of his letter there is a strong suggestion that he has done so, and I venture to say that, in these circumstances, he has no right to imply that his work has shown that the clinician must decide whether he is inhumanly to leave his patient awake or be aware that he is even in the slightest degree causing some degradation of his nervous system.

I am, Sir, yours faithfully,

Penshurst, Kent, Feb. 10th, 1934. T. A. ROSS.

To the Editor of THE LANCET

SIR,—I thank Dr. Pickworth for pointing out that I had expressed myself inaccurately when referring to his experiments. I did not intend to criticise the experiments themselves but the inferences that Sir William Willcox had drawn from them. The experiments, inter alia, were made with massive doses of the barbituric acid group of drugs, such as are never used in clinical medicine, and yet Sir William quoted them as supporting his case when criticising

the therapeutic administration of these drugs. Dr. Pickworth has given widely different conditions in which mucinoid substances are found in the central nervous system. He might have added the work of Dr. C. Polson who concluded from his experiments that "this material is a pathological lesion of laboratory animals, unconnected with any experimental procedure."

Therefore it would appear that there is no certain knowledge that these drugs even in massive doses give rise to "degradation of nervous tissue." What scientific grounds has Dr. Pickworth for saying "proof of greatly increased degradation of nervous tissue, such as we have shown to occur in animals with large doses of hypnotic drugs, demands care in the use of even small doses"? The proof is contested by another observer and at best occurs in several conditions, and why use the word "large" when "massive," as massive it truly was, is the term he has already employed. In fact they are so massive that they would be equivalent in a man to a dose of about 500 grains of veronal a night, which is one hundred times larger than a usual therapeutic dose.

The last sentence of Dr. Pickworth's letter shows how afraid he is of using these drugs, for it would appear that he is only prepared to give them when a patient is "in extremis from insomnia." Against this personal view is the fact that the majority of the medical profession use them because they find them of value in helping their patients back to health. Dr. Pickworth's letter once more shows the nature of the criticism which certain scientific men are prepared to use when condemning these drugs. He is prepared to base the treatment of patients on an experiment the value of which was challenged by Dr. Polson (Brit. Jour. Exper. Path., viii., 205) in 1927, and so far as I am aware he has made no attempt to meet this challenge. He has done what Sir William Willcox has done—made wide generalisations from a few facts each of which is assailable.

The addiction which Sir William Willcox sees is not observed by other physicians, except in the few individuals who are general addicts. He says that these drugs lead to suicide, not apparently appreciating that suicide is due to an attitude of mind in the patient, the method employed being determined by other influences not the least of which is imitation or suggestion. I repeat what I have said in my former letter, that this discussion strikes at the root of prevention of mind disorder and suicide as a result of sleeplessness. At the present time patients are being distracted between following the advice of their medical attendant and the fear that by doing so and taking one of these drugs they may damage their brains. Such conflict will not be lessened by further restrictions, for these will only strengthen their fears, which already are among the most distressing features of their illness.

I am, Sir, yours faithfully,

MAURICE CRAIG.

East Preston, Sussex, Feb. 10th, 1934.

ADENOID AND TONSIL OPERATIONS

To the Editor of THE LANCET

SIR,—Mr. Layton, in your issue of Jan. 20th, is indignant with certain general surgeons because they remove the tonsils of such of their cases as they consider to need the operation. Speaking in default of those better qualified than myself, I assure him that the general surgeons agree with all he says about the necessity for most careful consideration before advising tonsillectomy. But once it has been decided upon, many of them feel as disinclined to hand a child over to the oto-rhino-laryngologist as they would be to have one of their hernias or appendices dealt with by a technique corresponding to that of the short-anæsthetic-guillotine.

This is not mere prejudice; there is a fundamental difference between those of his school and those who believe that there are certain universal principles of surgery that should be universally applied. To take one of the first cleavages, the general surgeon looks upon exact anatomy as the foundation of operating, while the laryngologists in their attack upon the tonsil appear to ignore anatomy completely. I believe that the reason for this is that their traditional surgical anatomy is wrong where it is not deficient, and that this false teaching is the cause of most of the dangers and disappointments which Mr. Layton describes.

I have committed myself several years ago to my own views, which are violently at variance with the traditional ones. The reference can be found in the new edition of Gray's Anatomy. Will Mr. Layton tell us where we can find the account of the anatomy, with the dissections to prove it, upon which he bases his own technique?

I am, Sir, yours faithfully,

DENIS BROWNE.

Queen Anne-street, W., Feb. 12th, 1934.

MOVING RADIOGRAMS

To the Editor of THE LANCET

SIR,—Seven years ago you noticed in an annotation (THE LANCET, 1927, i., 241) my work on X ray cinematography. I had been experimenting in this direction since May, 1921, but, as you observed, I had not up to 1927 been able to obtain cinematographic records of the movements of the alimentary tract. I was, however, able to obtain films of the human thorax in September, 1925. I read a paper and showed some films before the Rontgen Society in January, 1927 (Brit. Jour. Radiol., 1927, xxiii., 33), and again before the American Roentgen Ray Society in Montreal, in September, 1927 (Amer. Jour. Roentgenol., 1928, xix., 469).

During the past twelve months I have succeeded in obtaining cinematograph films of the viscera; the movements of the stomach and alimentary tract after the administration of a barium meal are well seen and can be studied at leisure. The methods can be carried out expeditiously and are inexpensive. I hope that this technique, of which full details are to be published in the near future, will justify your anticipation as expressed in the previous notice to which I have referred, that "great advances in medical physiology and clinical medicine may result."

I am, Sir, yours faithfully,

RUSSELL J. REYNOLDS.

London, W., Feb. 10th, 1934.

QUERY "SPLANCHNOSTAXIS"

To the Editor of THE LANCET

SIR,—As discussion is invited by the authors on their most interesting case in your issue of Feb. 10th (p. 289), may I now suggest that this may have been an instance of severe and sudden thrombopenia? The platelet count is not given. In my own series of 13 cases of essential thrombopenia (Proc. Roy. Soc. Trop. Med., 1929, vol. xxii., No. 4) treated by splenectomy, hæmorrhages into or underneath the skin were absent in five, the only symptom being severe hæmorrhage from some internal organ or from mucous membranes; the absence of purpura does not therefore exclude that diagnosis, while the presence of hæmatomata in the mesentery and omentum would rather support it. Others beside myself have reported immediate cessation of hæmorrhage at the operation

when the pedicle of the spleen was ligatured; that procedure or a rapid splenectomy might possibly have been useful here.

I am, Sir, yours faithfully,

A. KNYVETT GORDON, M.B. Camb.

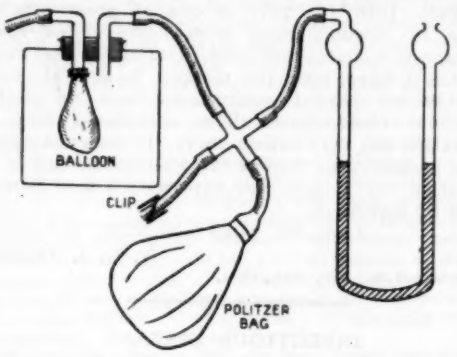
Feb. 11th, 1934.

VALVULAR PNEUMOTHORAX

To the Editor of THE LANCET

SIR,—The article by Dr. Boland in your issue of Feb. 3rd (p. 231) raises several points which are open to friendly criticism. I will refrain from commenting on his statement that "the opening in the lung is of necessity a small one, and when the lung expands with expiration the orifice is closed and the air trapped," since I feel certain that it must be a misprint. The subsequent explanation of a valvular pneumothorax is so laboured, and yet so widely held, that I feel it desirable to suggest an alternative.

For the production of a valvular, as opposed to a simple, pneumothorax it is necessary first that the



hole be of pin-point dimensions, and secondly that it should occur in an area of lung whose normal elasticity is impaired. In the absence of pleural adhesions the lung will then be permitted to collapse progressively until the margins of the hole can retract and close. Any increase of intrapleural pressure, such as by forced expiration, will then tend to collapse the lung further and close the hole more tightly. In forced expiration against a closed glottis, as in coughing, little exchange can be expected between the alveoli and pleural space, since the pressures in both must be equal.

In deep inspiration, however, such as precedes and accompanies a paroxysm of coughing, the pressure in the pleural cavity becomes lower than that in the alveoli (the negative pressure being a measure of the elasticity of the lung). In consequence the lung expands slightly, the hole gapes, and air passes from the alveoli into the pleural space. On subsequent expiration the pressure in the pleural space rises, the lung contracts, and the hole again closes, *leaving a larger volume of air than before in the pleural cavity.* Thus the pneumothorax will increase in size to a point when the deepest inspiration cannot produce a sufficiently negative pressure in the pleura to expand the lung and open the hole. The degree of positive pressure which is attained in the chest is therefore dependent on :—

1. The capacity for expansion of the thoracic cage.
2. The fixity of the mediastinum.
3. The elasticity of the lung.

On similar factors depends the fact that it is possible to get the severest mediastinal dislocation with but small positive pressures.

If Dr. Boland has any doubts about the truth of this argument, I would recommend him to put together the following simple apparatus, the illustration of which explains itself.

The cork of the bottle should be waxed to make it airtight, and for the same reason a Politzer bag (which must be fairly new) is employed instead of a syringe. The "lung" consists of a penny balloon connected with the atmosphere by a short length of rubber tube to represent the glottis. The chest wall and parietal pleura are formed by a glass jar and the respiratory alteration in pressure can be imitated by manipulation of the Politzer bag. The manometer records the pressure in the bottle or "pneumothorax," which can be "set" at any desired level by sucking or blowing down a fourth tube which is closed with a clip. The balloon is then punctured with a fine needle.

With this apparatus Dr. Boland will find that if the act of coughing be imitated by momentarily nipping the "glottis" while squeezing the Politzer bag, the subsequent pleural pressure, far from being increased, becomes of a *slightly higher negative value.* Before proceeding to mimic forcible inspiration (commencing with the Politzer bag squeezed flat) I would suggest that he clip the tube leading to the manometer.

The hole in a lung which is responsible for a simple spontaneous pneumothorax is of a larger size, and is usually readily found should it come to post-mortem. In this respect the bigger the hole, the better for the patient. I will leave further criticism to Dr. Boland's imagination, only emphasising the fact that once a fibrotic lung has been actively compressed, it takes an extremely high negative pressure to pull it out again.

Finally the dangers of creating a traumatic pneumothorax of a valvular type by needling a patient with a bilateral pneumothorax are so real, and the precautions to be taken so definite, that I feel certain that some more able pen than my own has already committed them to paper.

I am, Sir, yours faithfully,

H. R. DONALD.

Alderley Edge, near Manchester, Feb. 8th, 1934.

THERAPEUTIC PYREXIA

To the Editor of THE LANCET

SIR,—Having read your note on the use of short-wave diathermy for inducing pyrexia (Feb. 3rd, p. 272), I should like to make it clear that in my letter of Jan. 27th I did not wish to imply that apparatus for this purpose is made only by the General Electric Company in the United States. I know that it is obtainable in England. In your last issue Mr. S. F. Evans described a machine in use at the Newcastle General Hospital, and in my opinion this is in several points an improvement on the ones I recently saw in New York.

I am, Sir, yours faithfully,

DUMARESQ LE BAS, M.R.C.S., F.R.G.S.

London, Feb. 13th, 1934.

MUCOUS COLITIS

To the Editor of THE LANCET

SIR,—I was careful to use the term "colitis" and not "mucous colitis," because mucus in some shape or form is nearly always present in colitis. I stated that one of certain important diagnostic points was the presence of rectal pyrexia of 99°–100° F. I did not say that every patient exhibiting such pyrexia was suffering from mucous colitis. Dr. Hurst has withdrawn one of my statements from its context: I stated that "when long masses of mucus are discovered . . . *which disappear as the*

clinical state improves and rectal pyrexia vanishes." If the treatment which I advocate had in reality damaged the rectal mucous membrane, as Dr. Hurst suggests, how could the clinical state possibly become completely healthy, pyrexia disappear, and the result of lavage clean and normal? Two pints of barium may, at times, reach the cæcum when given for diagnostic X ray. But this does not alter the fact that four or five pints of solution may be necessary effectually to clear the cæcum; less than this may fail to effect cure. As regards the administration, at present the question seems to be treated as a matter of nursing, whereas it is in reality a procedure requiring specialised knowledge both on the part of the medical man and his assistants.

I am, Sir, yours faithfully,

HENRY W. HALES.

Portland-place, W., Feb. 12th, 1934.

A QUESTION OF NEGLIGENCE

To the Editor of THE LANCET

SIR,—On returning a few days ago from the country a friend of mine in the West End found her cook-housekeeper looking ill and complaining of a pain in her back. She sent her to bed and asked her panel doctor to call. He did so, was very offhand and said her temperature was normal, but he would call next day. When he did so he again took her temperature, said it was normal, prescribed, and told her she would soon be all right. After he had left my friend immediately took her temperature and found it to be over 101° F. She then sent for her own doctor, who also found the temperature over 101°, and said the woman was suffering from an acute attack of rheumatism. Next day the woman was admitted to St. Thomas's Hospital where the diagnosis was confirmed, and where she is to remain for some weeks as her temperature continues high.

Can anything be done to punish men who deal with their panel patients in this way? To my mind such a man should be struck off the panel altogether and never be allowed on again, for having heard accounts as to how some of them perform their panel duties makes me fear that such instances are not uncommon. One is apt to think that the National Insurance Act has not been such a blessing to the patients as some people try to make out, and certainly it has had a deplorable effect on the prestige of our profession.

Is this an argument against the adoption of a National Medical Service? I think it is.

I am, Sir, yours faithfully,

Monte Carlo, Feb. 7th, 1934. LEONARD MOLLOY.

*** Under the National Insurance Acts there is a provision whereby aggrieved patients—or even interested people like employers with the consent of such patients—can have their grievances investigated by an impartial tribunal without cost to themselves. There is no such tribunal for the non-panel doctor.—ED. L.

MODERN VIEWS ON RESPIRATION

To the Editor of THE LANCET

SIR,—In your report of my remarks at the section of anæsthetics of the Royal Society of Medicine last week (p. 298), I am erroneously quoted as having said that "prolonged oxygen lack in the administration of nitrous oxide did not do much harm as the oxygen need was small." What I actually pointed out was that though enough oxygen was usually present in nitrous oxide anæsthesia to provide the needs of the body, the *tension* of oxygen in the blood was definitely lowered when cyanosis was present and this had an adverse effect on all tissues. I also referred to the work of Ward and myself on the electrocardiographic changes in nitrous oxide anæsthesia in which we showed that the development of anoxæmia was frequently accompanied by changes in the electrical record suggestive of considerable functional disturbance.

I am, Sir, yours faithfully,

SAMSON WRIGHT.

Department of Physiology, Middlesex Hospital Medical School, Feb. 12th, 1934.

LOCAL ANÆSTHESIA FOR ABDOMINAL OPERATIONS

To the Editor of THE LANCET

SIR,—The method of local anæsthesia for abdominal operations described by Mr. Bankoff in your issue of Feb. 10th (p. 287) is one of great practical value in circumstances where general or spinal anæsthesia is contra-indicated. During the past twelve months I have used the method in suitable cases, notably for partial gastrectomy and for certain intestinal obstructions. The anæsthesia and the relaxation are very satisfactory. It does not appear to be necessary to remove the fluid at the end of the operation for I have not experienced any harmful effect by leaving it.

I am, Sir, yours faithfully,

T. G. I. JAMES.

London, N.W., Feb. 13th, 1934.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED FEB. 3RD, 1934

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 8 (last week 9); scarlet fever, 3348; diphtheria, 1415; enteric fever, 15; acute pneumonia (primary or influenzal), 1335; puerperal fever, 48; puerperal pyrexia, 128; cerebro-spinal fever, 32; acute poliomyelitis, 6; acute polio-encephalitis, 2; encephalitis lethargica, 11; dysentery, 23; ophthalmia neonatorum, 80. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on Feb. 6th–7th was as follows: Small-pox, 36 (last week 24); scarlet fever, 2068; diphtheria, 2058; enteric fever, 7; measles, 1473; whooping-cough, 319; puerperal fever, 29 mothers (plus 11 babies); encephalitis lethargica, 260; poliomyelitis, 4; "other diseases," 173. At St. Margaret's Hospital there were 19 babies (plus 7 mothers) with ophthalmia neonatorum.

Deaths.—In 118 great towns, including London, there was no death from small-pox, 2 (1) from enteric fever, 59 (13) from measles, 12 (2) from scarlet fever, 38 (9) from whooping-cough, 65 (17) from diphtheria, 34 (13) from diarrhœa and enteritis under two years, and 76 (15) from influenza. The figures in parentheses are those for London itself.

The deaths from influenza during the past few weeks (working backwards) have been as follows: 76, 67, 87, 100, 109, 83, 97, 95, 70, 59. The 439 deaths during the first five weeks of the year compare with the 7136 deaths for the corresponding weeks of 1933. Eight deaths were this week attributed to influenza at Birmingham (4 at Glasgow), 3 each at Southgate, Leeds, and Warrington; no more than 2 in any other great town. Eleven fatal cases of measles occurred at Leeds, 8 at Liverpool, 5 at Preston, and 3 at Southport. Whooping-cough was credited with 5 deaths at Liverpool, 4 at Manchester. Of the fatal cases of diphtheria 5 occurred at Manchester, 4 each at Hull and Liverpool.

The number of stillbirths notified during the week was 251 (corresponding to a rate of 40 per 1000 total births), including 30 in London.

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS

SALE OF CONTRACEPTIVES

IN the House of Lords on Feb. 13th Lord DAWSON moved the second reading of his Bill to restrict the sale, display and advertisement of contraceptives—the text of which was published in our issue of Feb. 3rd (p. 265). Lord BANBURY moved the rejection of the Bill, which was supported by the Bishop of LONDON and the Archbishop of CANTERBURY and was read a second time after defeat of the motion for rejection by 45 votes to 6.

HOUSE OF COMMONS

WEDNESDAY, FEB. 7TH

Registration Fees of Dental Surgeons in Kenya

Captain ELLISTON asked the Secretary of State for the Colonies whether, as a result of his representations to the government of Kenya, he had been able to secure for dental surgeons in that colony the same exemption from annual registration fees as had been already conceded to medical men practising under the same ordinances.—Mr. MALCOLM MACDONALD replied (on behalf of Sir Philip Cunliffe-Lister): Representations from the British Dental Association were communicated to the Governor of Kenya who points out that the decision to exclude medical practitioners from the scope of the Licensing Ordinance was taken because of the number of medically qualified men who, though retired from active work, yet engage in a little practice in outlying districts for the benefit of their neighbours and derive little or no income therefrom. Similar circumstances do not exist in the case of dentists, but any retired dentist who wishes to practise his profession in a small way is at liberty to apply for exemption from the annual licence. Correspondence on the subject is still proceeding.

Captain ELLISTON: Will my hon. friend point out to the Kenya Government that this matter affects fewer than 20 dental surgeons who are placed in exactly the same difficulty in a new and scattered community as medical practitioners and that they are entitled to fair treatment?

Mr. MACDONALD: I am certain that the authorities have taken that into account in arriving at their decision.

Road Accidents

Mr. ISAAC FOOT asked the Home Secretary what was the total number of persons killed and the number injured in road accidents in Great Britain during the eight years 1926 to 1933.—Sir J. GILMOUR replied: The numbers of persons killed and injured in road accidents during the eight years 1926 to 1933 are as follows:—

Year.	Killed.	Injured.	Total.
1926	4,886	133,888	138,774
1927	5,329	148,575	153,904
1928	6,138	164,838	170,976
1929	6,696	170,917	177,613
1930	7,305	177,895	185,200
1931	6,691	202,119	208,810
1932	6,667	206,450	213,117
1933	7,125	216,401	223,526
Total ..	50,837	1,421,083	1,471,920

THURSDAY, FEB. 8TH

Cost of Restoring Unemployment Cut

Mr. LAWSON asked the Minister of Labour the cost of restoring the 10 per cent. cut to the unemployed.—Sir H. BETTERTON replied: The restoration of the reduction in rates of benefit made in October, 1931, would, on the basis of finance assumed for the Unemployment Bill, increase the amount of benefit estimated to be payable by about £5,700,000. This figure does not include transitional payments.

Cost of Raising Children's Allowance

Mr. LAWSON asked the Minister of Labour the cost of raising the weekly payment for children by one shilling.—Sir H. BETTERTON replied: The cost of raising the allowance in respect of dependent children from 2s. to 3s. per week would, on the basis of finance assumed for the Unemployment Bill, increase the amount of benefit estimated to be payable by about £1,700,000. This figure does not include transitional payments.

Animal and Bird Poisoning

Mr. HALL-CAINE asked the Home Secretary if his attention had been called to outbreaks of animal and bird poisoning in different parts of the country; whether any reports had been made to him as to the causes of such poisoning; and whether, in view of the destruction of animal life which had resulted, the reason for scattering poison in these cases had been cleared up and the responsibility assessed.—Sir J. GILMOUR replied: I have seen references in the press to the finding of a number of dead rooks in and around Selcombe, Horsey, Dorset, but my attention has not otherwise been called to the matter. I have obtained from the local police a report from which it appears that after making inquiries they have reached the conclusion that the death of the birds in question was due to eating flesh containing strychnine which had presumably been put down for the purpose of destroying vermin. Efforts to trace the sale of strychnine during the past year to persons resident in the county have been unsuccessful and search has failed to reveal any remains of poisoned bait.

Inflammable Cinematograph Films

Mr. RHYS DAVIES asked the Home Secretary whether his attention had been called to the fact that 35 mm. inflammable cinematograph films about 1¼ inches wide were manufactured for professional purposes and sold in toy shops without restriction or warning as to the danger connected with such films; and whether he would take action in this matter.—Viscountess ASTOR and Dr. HOWITT asked questions on the same subject.—Sir J. GILMOUR replied: I understand that the film which is being supplied with some of the toy cinema projectors is of standard size and highly inflammable. Three accidents with this type of machine and film have been brought to my notice. In November last representations were made by the Home Office to the traders concerned and they agreed to issue with each machine and box of film sold a notice warning purchasers to take suitable precautions in handling the film. Similar action was taken with firms known to be advertising film for sale. I have no power or control over the sale of inflammable film, but I am making inquiry as to what further action can be taken to prevent risk of accident with these toys.

Mr. DAVIES: Will the right hon. gentleman at the same time inquire as to whether the persons who manufacture these inflammable films have carried out their promise to give notice to purchasers of the dangers involved if they use such films?

Sir J. GILMOUR: Oh yes.

Sale of Dangerous Drugs

Mr. DAVID GRENFELL asked the Home Secretary whether he had appointed any inspectors to supervise the sale of drugs of the barbituric group; and whether he was satisfied that power existed under the existing law to prevent the increasing sale of these dangerous drugs.—Sir JOHN GILMOUR replied: The Pharmacy and Poisons Acts contain no provision for the appointment of Government inspectors. As regards the second part of the question I would refer the hon. Member to the reply which I gave to a question on this subject on the 1st instant. I have no reason, as at present advised, to suppose that the powers of control of the sale of poisons conferred by the Pharmacy and Poisons Act, 1933, will not prove adequate for this purpose.

Mr. GRENFELL: Has the right hon. gentleman's attention been called to the alleged increase in the number of addicts, and to the undoubted increase in fatalities due to the use of these drugs?

Sir J. GILMOUR: Of course all that information has

come to me, and I hope that the new regulations under the Act will be effective.

Supplies of Milk to School-children

Lieut.-Colonel MOORE asked the Parliamentary Secretary to the Board of Education whether he would consider coöperating with the Milk Marketing Board with a view to extending the present arrangements for the provision of supplies of good milk to school-children at the lowest possible cost.—Mr. HERWALD RAMSBOTHAM replied: The hon. Member is no doubt aware of the rapid increase in recent year in the number of school-children receiving milk under arrangements organised by local education authorities or by the National Milk Publicity Council. My noble friend will be glad to coöperate with the Minister of Agriculture in any practicable proposals for securing a further extension.

Government and the Moyne Report

Mr. GRAHAM WHITE asked the Minister of Health if it was his intention to propose legislation to implement any of the recommendations of the Moyne report.—Sir HILTON YOUNG replied: Yes, sir.

Regional Planning in Greater London

Major NATHAN asked the Minister of Health whether he had considered the desirability of using his powers under Section 4 of the Town and Country Planning Act, 1932, to constitute, by order, an executive regional committee for Greater London, in order that an operative master plan for the region might be prepared as soon as possible.—Sir HILTON YOUNG replied: The Greater London Regional Planning Committee has been recently reconstituted. Its functions are primarily advisory; but in certain circumstances executive, in connexion with the preparation of planning schemes under powers which may be conferred upon it by any of its constituent authorities. The powers to which the hon. Member refers can be exercised by me only on request. No request for their exercise has been made. A regional committee with full executive powers could not be successfully established, except in response to a substantially unanimous demand from the local authorities.

Water Shortage in Rural Areas

Mr. JOHN asked the Minister of Health how many rural district councils had reported a serious shortage of water since last May.—Sir HILTON YOUNG replied: The Ministry have since last May received information of serious shortage of water from 44 rural district councils.

Water Surveys

Mr. LOGAN asked the Minister of Health how many county councils had taken action under Circular 1338, dated May 12th, 1933, by carrying out or initiating surveys in their areas as to conditions of existing water supplies and the availability of new supplies; how many county councils had reported that existing supplies were inadequate; how many county councils had considered schemes for improvement; and how many joint advisory committees had been set up.—Sir HILTON YOUNG replied: Forty-four county councils have taken action in the carrying out, initiation, or coördination of surveys in their areas. In addition, six county councils have rural schemes under consideration. These surveys are proceeding. The undertaking of surveys may be taken as evidence that improvement is needed in parts of the counties concerned, and that it is being considered. Six regional advisory committees have been formed. Measures have been taken for the appointment at an early date of two additional committees covering large areas.

Government Manufacture of Insulin

Commander LOCKER-LAMPSON asked the Minister of Health whether, seeing that insulin was the discovery of a Government official, he would prevent its manufacture except in Government laboratories.—Sir HILTON YOUNG replied: My hon. friend has, I think, been misinformed. Insulin was first prepared at Toronto University in 1922 by Dr. F. G. Banting and others. It is manufactured in this country under licences granted under the Therapeutic Substances Act, 1925, subject to compliance with the regulations made under the Act.

Conditions in Hopfields

Mr. ALAN TODD asked the Minister of Health if he could give an assurance that he would bring pressure to bear on local authorities in Worcestershire and Herefordshire in order that he might be satisfied that conditions in the hopfields were such that hop pickers might reasonably be able to take their children to the hopfields without injury to their health or morals.—Sir HILTON YOUNG replied: I regret that I have not yet received sufficient information from the Staffordshire county council to enable the farms complained of to be identified. As soon as I have received the information the matter will be taken up.

Woman's Suicide in Hampstead

Mr. GODFREY NICHOLSON asked the Minister of Health if he would cause full inquiries to be made into the circumstances surrounding the death of Mrs. Gwendoline Hickley, of Hampstead, who committeed suicide owing to starvation.—Sir HILTON YOUNG replied: I have perused the press reports on this most distressing case, and have already made full inquiries into it. According to the information supplied to me, the facts are that Mr. Hickley was insured against unemployment under the Insurance Industry Special Scheme, which is administered by the Insurance Unemployment Board. He had been in receipt of benefit under that scheme at the rate of 32*s.* a week up to Jan. 6th last, when his right to benefit was exhausted. His application for transitional payments under the scheme was assessed at 14*s.* 6*d.* by the claims officer of the Board, subject to a right of appeal to its appeals committee. An appeal was lodged by him on Jan. 17th, and is at present before the committee. No application for public assistance has been made by Mr. Hickley.

Research on Sterilisation

Wing-Commander JAMES asked the Minister of Health what steps were being taken to implement the recommendations upon research in the report of the departmental committee upon sterilisation.—Sir HILTON YOUNG replied: I am in consultation through the Board of Control with the Medical Research Council and the Registrar-General as to the best course of action.

Supply of Milk to Scottish Hospitals

Mr. BURNETT asked the Secretary of State for Scotland if he would give an assurance that he did not intend to bring the Aberdeen and District Milk Marketing Scheme, 1933, before this House for approval, in view of the increased charges which it would entail for the supply of milk to hospitals and similar institutions.—Mr. SKELTON, Under-Secretary of State for Scotland, replied: I cannot give the assurance asked for. My hon. friend is mistaken in stating that the scheme entails increased charges for the supply of milk to hospitals and similar institutions. The scheme, in fact, provides that the Board may fix the price for charitable purposes and to public institutions at a lower level than the ordinary standard price.

Recruitment of Local Government Officers

Mr. JOEL asked the Minister of Health when the Government proposed to take any steps to implement the recommendations of the Hadow Committee (see THE LANCET, Feb. 3rd, p. 267).—Sir HILTON YOUNG replied: The report recommends measures to be taken by local authorities. Legislation is not required. I propose to communicate with the London County Council and associations of local government authorities when they have had time to consider the report.

Disposal of Surplus Milk-supplies

Mr. RICHARD EVANS asked the Minister of Agriculture whether the Milk Marketing Board was experiencing at present any difficulty in disposing of milk surplus to domestic requirements; whether it anticipated any greater difficulty in doing so during the summer months; and whether he would bring to the notice of the Board the advisability of using a part of its surplus in supplying schools and hospitals with additional quantities at the same price as was charged to manufacturers.—Mr. ELLIOT replied: I understand that, at the level of prices obtaining for manufacturing milk in the current contract period, the Milk Marketing Board have experienced very little difficulty in disposing of surplus milk. Whether there will be greater difficulty during the summer months will again depend largely on prices. The Board are, I am confident, fully alive to the importance of developing alternative outlets for liquid milk.

OBITUARY

DONALD ELMS CORE, M.D. Manch., F.R.C.P. Lond.

WE regret to announce the death at Manchester, on Feb. 8th, of Dr. Donald Core at the age of 51 years. Medicine is the poorer for the loss of one who might now, if his health had been good, have been doing his best work. His name stands high in the group of psychologists and neurologists—Braid, Noble, Ross, Thorburn, Reynolds, Bury, and others—who have brought Manchester into prominence in this branch of medical inquiry.

Born in Manchester, though of Scottish descent, his family coming from the district where the Clyde is still small to South Lanarkshire, he was the son of Prof. T. H. Core, who for many years held the chair of physics in the Manchester University. Donald Core studied medicine in the same university and proved himself a brilliant scholar, taking first-class honours in his qualifying examination and gaining distinction for his M.D. thesis. After passing through the usual house appointments and having spent some time in Paris, where he acquired a love of French medicine which he always retained, he devoted himself largely to psychology and neurology. Though he used none of the usual ritual of psychotherapy, the scrupulous care with which he worked out the true condition of his patients' minds made him a psychotherapist of the highest order.

DR. CORE

[Photograph by Gullenbery

His two books, "Functional Nerve Disorders" and "Examination of the Central Nervous System," reveal the two sides of his work. In the former book his deeper thoughts may not be easy to follow by those unversed in psychological terms; but in his post-graduate lectures Core was able to bring himself to the practitioner's level, especially in a discourse on dreams which is not likely to be forgotten by those who heard it. His colleagues at the Royal Infirmary were accustomed to see him leaning against a high-backed chair in the medical board room, gazing into space for perhaps half an hour before beginning his morning's work. This was the place, he would say, where he did his best thinking. In a world of bustle and hurry Core belonged to the old-world type of physician who believed in the pre-eminence of his own discipline of medicine over others, in a manner worthy of the seventeenth or eighteenth century. For a time he was physician of the Ancoats Hospital; in 1917 he was elected to the honorary staff of the Royal Infirmary, soon after the retirement of Dr. R. T. Williamson, and quite recently he became full physician with charge of beds. He was also lecturer in neurology in the university.

Donald Core did not marry. He was a man liked by everybody and friendly with everybody but with few intimate friends, living largely in the circle of his sister and brothers. Probably he would have made more close friendships had not the energy he put into his work in the day-time wearied him so that, as ill-health gained on him, he was less and less inclined to mix with others in his free time. Never really robust, he had an attack of pleurisy early in the war while on the way to Mesopotamia with the Thirty-third General Hospital. Invalided to India, he developed malaria, and enjoyed one of the best holidays of his life touring through Kashmir. In general holidays had little attraction for him and almost his only hobby outside his work was fishing.

After the war his life was a long struggle against ill-health and for the last few months he was not able to carry out his practice or his hospital work. He died rather unexpectedly at his home in West Didsbury.

GERARD FORD PORTER, M.D. Manch., F.R.C.S. Edin., J.P.

THE sudden death, still in his prime, of Mr. G. F. Porter on Jan. 21st came as a shock to Harwich and its neighbourhood, where he was very well known. The son of Sir Alexander Porter, he was educated at Manchester grammar school and university, qualifying in 1906; after which he held a series of house appointments at the Royal Infirmary, St. Mary's and Ancoats hospitals, at Plymouth, and as ship's surgeon on a Blue Funnel, before becoming medical officer and port sanitary officer to the borough of Harwich. From 1915 to 1919 he acted as surgeon specialist with the rank of captain, and it was owing to his foresight and enthusiasm that the Harwich and Fryatt memorial hospital was built and equipped on its fine modern site. A surgical friend writes: "This hospital was the apple of his eye and became the centre of surgical and medical practice for miles around. It did not take long for those who worked with him to realise Porter's sterling qualities as an operating surgeon, although he remained always the family doctor—the philosopher and friend of his patients. He found time for everything, reading in all the branches of his profession and general literature, able to take part with effect whether the subject in hand was politics, travelling, music, or games. To some of us he was known as 'Friar Tuck' and his jolly smile, jaunty step, and ever-present optimism will not be forgotten." Dr. Porter was in his fiftieth year.

LOUIS VINTRAS, B.Sc. Paris, M.D. Durh.

Dr. Vintras who died at Brighton on Feb. 10th in his 70th year was the son of Dr. Achille Vintras, founder of the French Hospital in Shaftesbury-avenue, and the French convalescent home at Brighton. He was educated at University College School, London, and Paris University, where he took a science degree, and went to St. Mary's Hospital, Paddington, for his medical training, qualifying in 1890. He then travelled as medical officer in the R.M.S.P. service to the West Indies and South America, and during the South African war he was medical officer to H.M. transport *Tagus*. His association with the French Hospital began as R.M.O.; in 1894 he was appointed physician, practising in London until 1907 when he was nominated by the French Government to take charge of the Brighton home. In the Great War he was commandant of the French auxiliary hospital in Brighton.

He was naturally bilingual and was of great service to French and Persian delegates at the Congress of Hygiene and Demography (1891) in London, and helped to organise the section of hygiene at Brussels in 1910. He was made a knight of the Légion d'honneur and also held the medal of King Albert of Belgium. Dr. Vintras is survived by his wife, who was a daughter of Mr. A. Maw, J.P., of Ironbridge, Salop, and an only son who is in the Royal Air Force.

ROBERT DANIELS BELL, M.B. Glasg.

Dr. Robert Bell, who died on Jan. 25th, was the senior member of a large firm of practitioners at Luton, and was extremely well known in the neighbourhood where his high qualities were fully appreciated. He received his medical education at the University of Glasgow, where he graduated as M.B., Ch.B. in 1904. He had held the resident appointments at the Western Infirmary, Glasgow, before entering into partnership at Luton, and was at once recognised as a competent doctor. During the war he held a commission in the R.A.M.C. and was severely gassed while attending to the wounded in the front line, receiving the Military Cross for gallantry in the field. In Luton he held the posts of surgeon to the Bute Hospital, medical officer to the Post Office, and for a period to the Union and the Children's Homes. He was an advanced Liberal in politics, vice-president of the Divisional Liberal Association, and an influential speaker on public affairs. Dr. Bell's illness was a brief one, but his health had been permanently injured by the war services. He leaves a wife and four daughters.

MEDICAL NEWS

University of Cambridge

At recent examinations the following candidates were successful:

D.M.R.E.

Part I.—J. D. P. B. Boyd, A. A. Dunlevy, J. H. Gillespie, T. R. Harlan, M. S. Kavarana, A. U. Millar, G. R. Nolan, H. I. Osler, J. P. Raban, C. W. Robertson, and T. F. Tierney.

On Feb. 10th the following degrees were conferred:

M.D.—Sidney Vatcher.
M.B. & B.Chir.—G. F. Barran.
M.B.—C. R. T. Lane and W. D. Brown.
B. Chir.—E. C. Herten-Greaven, A. R. Thomas, E. G. Pyne, A. C. L. Houlton, and Joseph Smart.

English Conjoint Board

At the final examination held from Jan. 1st–25th the following candidates were approved in the subjects indicated, but are not yet eligible for diplomas of the Royal Colleges:—

Pathology.—G. T. Balean, Guy's; Phyllis M. Ball, Birm.; A. B. Barbour, St. Bart.'s; C. R. Barker, Univ. Coll.; G. Bates, Birm.; F. R. Berridge, Camb. and St. George's; D. Bhatia, Punjab and West London; A. S. Bookless, Camb. and Guy's; Edith J. R. Browne, Royal Free; R. Bruce, King's Coll.; T. B. L. Bryan, Camb. and St. Mary's; A. G. Butters, St. Bart.'s; E. M. Buzzard, Oxf. and St. Thos.; H. Cameron, Guy's; C. Campbell, Univ. Coll.; H. Caplin, London; Freda M. Chalkley, Charing Cross; R. G. Chapman, Guy's; S. C. Chatterjee, Calcutta and West London; A. B. Concanon, Liverp.; J. H. L. Conway-Hughes, St. Bart.'s; F. H. Culshaw, Camb. and St. Bart.'s; R. S. Dale, St. Mary's; J. E. Darlow, Guy's; D. W. Davies, Middlesex; H. H. Davies, St. Bart.'s; W. J. F. Davies, Cardiff; J. N. Deakin, Birm.; F. H. D'Souza, Guy's; N. J. Dias, St. Bart.'s; Lynette Dowsett, Royal Free; R. S. Ellis-Brown, Guy's; F. I. Evans, Camb. and Guy's; A. Fearnley, Oxf. and King's Coll.; Annie Fidler, Manch.; J. M. Fleming, London; J. A. C. Franklin, St. Thos.; I. N. Fulton, Camb. and St. Bart.'s; A. J. Glazebrook, St. George's; D. R. Gray, Camb. and Bristol; P. R. Greeves, Oxf. and Middlesex; P. K. Guha, Univ. Coll.; W. H. C. M. Hamilton, St. Thos.; T. N. Hart, Camb. and Manch.; W. F. Harvey, London; Barbara D. F. Hay-Cooper, Royal Free; P. A. M. Heath, Birm. and Durham; C. F. Heys, Guy's; Joan Hickinbotham, Birm.; D. A. Hovenden, St. Thos.; H. G. Howitt, London; G. B. Hughes, London; W. G. Hutton, Camb. and Leeds; F. Janus, Manch.; F. J. G. Jefferiss, St. Mary's; I. H. Jenkins, St. Thos.; D. M. Jones, St. Bart.'s; R. N. Jones, Birm.; T. E. Jones-Davies, Camb. and St. George's; H. Kaplan, Guy's; M. R. Kark, Guy's; J. H. Kellgren, Univ. Coll.; A. A. Khan, West London; M. D. Kiddon, St. Mary's; J. W. J. Knowles, St. Thos.; M. Krone, Middlesex; R. W. G. Lancashire, Oxf. and Manch.; J. H. Lankester, Camb. and St. Thos.; B. Lazarow, Guy's; J. A. Lewis, St. George's; F. D. M. Livingstone, Camb. and St. Bart.'s; G. G. Macdonald, Univ. Coll.; E. B. Z. Masterman, Camb. and St. Bart.'s; H. B. May, Camb. and London; M. L. Meade-King, Camb. and Westminster; J. F. Morris, Guy's; P. Morris, Westminster; R. F. Mowll, King's Coll.; D. J. M. Moynahan, St. Bart.'s; S. Mullick, Calcutta and St. Bart.'s; R. Murphy, Sheffield; W. S. Noble, Guy's; Ivy E. Oliver, Royal Free; H. E. Osen, St. Bart.'s; S. H. Pearse, St. Thos.; Eileen M. Peel, Birm.; R. Peters, Univ. Coll.; R. A. Piachaud, Ceylon and Univ. Coll.; A. R. Pope, Camb. and St. Bart.'s; T. S. Protheroe, Guy's; Silvia W. Pyddoke, Royal Free; J. W. Redgate, Middlesex; J. H. Rees, St. Bart.'s; S. Roberts, Bristol; M. G. Robinson, Birm.; Eileen G. Rose, Leeds; W. T. Ross, Cape and St. Bart.'s; R. S. F. Schilling, St. Thos.; S. K. Sen, Patna; R. H. Shah, Manch.; C. W. T. Shuttleworth, Guy's; K. Soddy, Univ. Coll.; C. Tetlow, Manch.; Mary G. Thomas, Bristol; Nest Thomas, Royal Free; Dorothy J. Thompson, Camb. and Bristol; T. H. Tidswell, St. Bart.'s; T. G. Tregaskis, St. Bart.'s; R. J. Vakil, St. Thos.; F. H. Weston, Guy's; E. G. K. Williams, St. Bart.'s; G. Williams, St. Mary's; I. D. C. Williams, Guy's; W. H. Wolstenholme, Manch.; Audrey R. Wood, Royal Free; and Betty M. Zeal, Univ. Coll.

Medicine.—Helen M. Alcock, King's Coll.; E. C. Allibone, Leeds; A. H. Bartley, Edin. and West London; R. A. Binning, Camb. and St. George's; R. H. Blazeby, Guy's; Joyce M. Brockington, Royal Free; Edith J. R. Browne, Royal Free; Ruth M. Campbell, Royal Free; A. M. R. Cann, Middlesex; H. Caplin, London; R. F. Clarke, St. Bart.'s; C. D. Clements, Univ. Coll.; M. C. Condillac, Madras and Westminster; T. M. Daniel, St. Bart.'s; D. W. A. Degazon, Univ. Coll.; J. A. Dhacka, Univ. Coll.; L. D. P. Dharmaratne, King's Coll.; Lynette Dowsett, Royal Free; H. J. Fenn, King's Coll.; A. F. Fowler, St. Thos.; Violet Fry, Bristol; R. H. Gardiner, King's Coll.; W. R. Gavin, Camb. and St. Thos.; H. W. Gordon, Wits'rand and London; G. J. Hamilton, St. Bart.'s; J. Hardman, Birm.; J. H. T. Harrington, St. Mary's; A. G. Hounslow, Univ. Coll.; R. S. Illingworth, Leeds; J. E. Jameson, St. Thos.; R. M. Kirkwood, St. Bart.'s; J. V. Laverick, St. Bart.'s; A. M. Lester, King's Coll.; F. D. M. Livingstone, Camb. and St. Bart.'s; D. Lubin, Ohio; I. Magdi, Cairo and St. Bart.'s; T. D. M. Martin, St. Thos.; S. P. Mason, Middlesex; E. B. Z. Masterman, Camb. and St. Bart.'s; J. G. Mathias, London; Queenie I. E. May, Royal Free; B. M. Merriman, St. Bart.'s; Anisa Nagi and Ivy E. Oliver, Royal Free; H. E. Osen, St. Bart.'s; M. M. Osher, King's Coll.; H. N. Perkins, St. Mary's; R. A. Piachaud, Ceylon and Univ. Coll.; R. E. A. Price, London; Silvia W. Pyddoke, Royal Free; W. G. S. Roberts, St. Thos.; W. T. Ross, Cape and St. Bart.'s; B. D. Sachdeva, Guy's; J. I. Seidman, B. Selwyn, and G. E. T. Soden, St. Bart.'s; G. L. R. Tapsell, St. Mary's; Mary G. Thomas, Bristol; and W. Waks and A. R. C. Young, St. Bart.'s.

Surgery.—A. R. Agati, St. Thos.; D. E. W. Anderson, London; R. A. Andrews, Camb. and Guy's; N. Angel, Birm.; K. C. Bailey and R. C. B. Barbor, Camb. and St. Thos.; T. L. Barbour, Camb. and Guy's; C. Bard, London; C. H. D. Bartley, Camb. and St. Thos.; H. H. Bayley, Camb. and King's Coll.; H. T. D. Bocking, Birm.; C. H. T. Bond, Camb. and St. Mary's; N. P. Brown, Camb. and Middlesex; T. B. L. Bryan, Camb. and St. Mary's; H. Cameron, Guy's; C. M. Carlyle-Gall, St. Thos.; A. M. Chapnick, Westminster; S. C. Chatterjee, Calcutta and West London; R. M. Clarke, Middlesex; H. M. Clegg, Leeds; S. G. Collingwood, St. Bart.'s; A. N. F. Critchley, St. George's; M. C. Damkengrit, Camb. and St. Thos.; Rosalind M. S. Derham, Bristol; A. M. Desmond, London; Lynette Dowsett, Royal Free; C. E. Elliott, Camb. and St. George's; A. B. R. Finn, Camb. and St. Thos.; J. M. Fleming, London; R. F. Fleming, St. Mary's; I. C. Fletcher, Camb. and Middlesex; J. F. A. Forster, Guy's; J. C. Garland, Middlesex; J. Greenhalgh, Guy's; G. D. Hadley, Camb. and Middlesex; J. T. Hallett, Camb. and St. Thos.; W. H. Hamilton, Guy's; J. W. Hannay, Camb. and London; J. Hardman, Birm.; T. N. Hart, Camb. and Manch.; Violet C. Hart, West London; R. V. Havard, Cardiff and Univ. Coll.; L. A. Hawkins, Camb. and London; Barbara D. F. Hay-Cooper, Royal Free; J. N. Heales, Bristol; J. C. Henry, Guy's; N. T. Holden, Camb. and Westminster; R. D. Holloway, Camb. and St. George's; H. G. Howitt and G. B. Hughes, London; N. G. Hulbert, Camb. and St. Bart.'s; C. C. Hurst, Manch.; D. B. Hyslop, Charing Cross; A. Innes, Camb. and St. Bart.'s; I. H. Jenkins, St. Thos.; B. S. Jones, Camb. and London; A. C. Kanaar, St. Bart.'s; R. W. G. Lancashire, Oxf. and Manch.; T. Levitt, Middlesex; W. D. F. Lytle and C. W. Maisey, St. Thos.; A. B. Marshall, Westminster; L. C. Martin, Camb. and Middlesex; S. G. Mayer, Camb. and London; N. H. Merchant, Bombay and Univ. Coll.; W. G. Q. Mills, Camb. and St. Thos.; C. Mitchell, Guy's; J. N. Morris, Univ. Coll.; G. R. C. Palmer, St. Thos.; C. G. Parsons, Camb. and Birm.; G. T. Pitts, Camb. and St. Thos.; E. H. Platts, Camb. and Leeds; C. H. G. Price, Bristol; T. A. Ratcliffe, Camb. and St. Thos.; C. Ratnayaka, King's Coll.; D. Sanyal, Lucknow and London; A. I. Shaw, Univ. Coll.; H. J. Sherren, Camb. and St. Thos.; T. L. H. Shore, Camb. and London; G. G. Smith, St. Thos.; J. I. M. Smith, King's Coll.; J. R. St. G. Stead, London; B. Thorne Thorne, Camb. and St. Bart.'s; A. S. Till, Camb. and Middlesex; T. H. Tulpule, Bombay and West London; R. H. A. Turner, Camb. and Westminster; C. T. H. Whiteside, St. Thos.; M. Williams, Camb. and St. George's; J. W. Wishart, Manch.; F. L.

Wollaston, Bristol; L. S. F. Woodhead, Westminster; G. M. Woolford, St. Thos.; and Winifred F. Young, Camb. and King's Coll.

Midwifery.—E. M. Abelson, Leeds; S. Alankaram, Royal Free; E. C. Allibone, Leeds; I. J. Amorin and Ada Aspinall, Manch.; S. H. Awad, Glasgow; Margaret D. Baber, Univ. Coll.; A. H. Bartley, Edin. and West London; A. H. Barwell, St. George's; J. Benn, Leeds; F. R. Berridge, Camb. and St. George's; J. R. Bodington, Camb. and London; A. G. W. Branch, Bristol; B. B. Bridges, Camb. and Guy's; R. Bruce, King's Coll.; T. B. L. Bryan, Camb. and St. Mary's; E. W. Burstal and A. G. Butters, St. Bart.'s; C. Campbell, Univ. Coll.; W. A. Carey, King's Coll.; A. H. Casson, St. Bart.'s; T. D. Chablani, Bombay and St. George's; Dora J. A. Clark, Royal Free; S. G. Clayton, King's Coll.; Gladys E. Clyne, Royal Free; A. H. Cooke, St. Bart.'s; J. H. Crawford, Leeds; J. R. G. Damrel, Bristol; T. M. Daniel, Camb. and St. Bart.'s; J. E. Darlow, Guy's; S. M. Davidson, Camb. and St. Mary's; D. H. Davies, Camb. and Middlesex; G. B. Davis, King's Coll.; D. W. A. Degazon, Univ. Coll.; S. Devi, Royal Free; T. S. Eddy, Guy's; K. C. Eden, Univ. Coll.; A. G. Edwards, Guy's; P. Emmerson, Durham; E. A. Evans, Camb. and King's Coll.; R. Farncombe, St. George's; J. D. Fergusson, Camb. and St. Thos.; Margaret J. Foster, Camb. and Univ. Coll.; O. P. Frank, St. George's; J. H. Garnett, Manch.; P. R. Gavin, St. Thos.; J. Greenhalgh, Guy's; D. J. Gilbert, King's Coll.; H. W. Gordon, Wits'rand and London; J. L. Gordon, Middlesex; E. O'D. C. Grattan, Camb. and St. Thos.; P. K. Guha and A. H. Hall, Univ. Coll.; J. W. Hannay, Camb. and London; Violet C. Hart, West London; R. V. Havard, Univ. Coll.; L. A. Hawkins, Camb. and London; W. N. L. Haynes, St. Thos.; P. A. M. Heath, Birm. and Durham; O. L. Hewson, Birm.; G. S. Hodge, Univ. Coll.; N. T. Holden, Camb. and Westminster; T. H. Howell and N. G. Hulbert, Camb. and St. Bart.'s; A. H. Hunt, Oxf. and St. Bart.'s; J. Hynes, Middlesex; A. Innes, Camb. and St. Bart.'s; J. R. R. Jenkins, St. Bart.'s; E. I. Jones, King's Coll.; I. D. Jones, Middlesex; O. L. Jones, Liverp.; P. G. C. Jones, Guy's; W. H. Jones, Camb. and Univ. Coll.; T. E. Jones-Davies, Camb. and St. George's; J. H. Kellgren, Univ. Coll.; A. W. Khan, Bombay and Manch.; M. A. Khan, West London; J. C. Koopman, Camb. and Middlesex; A. M. Lester, King's Coll.; V. Lewis, St. Mary's; H. S. Lillie, Middlesex; G. G. Macdonald, Univ. Coll.; E. B. McDowall, Camb. and St. Thos.; F. H. Masina, Camb. and St. Bart.'s; R. A. Mathews, Bristol; Queenie I. E. May, Royal Free; M. L. Meade-King, Camb. and Westminster; R. L. Mehra, Punjab; K. W. Monks, Camb. and St. Thos.; A. Moore, Univ. Coll.; J. F. Morris, Guy's; P. Morris, Westminster; J. H. Moseley, Camb. and St. Thos.; R. F. Mowll, King's Coll.; E. J. Moynahan, Univ. Coll.; A. A. K. Naqshbandi, West London; G. P. Neogy, Bengal and London; R. M. Noordin and A. Orlek, St. Bart.'s; N. C. Oswald, Camb. and Charing Cross; B. H. Page, Camb. and London; C. G. Parsons, Camb. and Birm.; F. R. P. Pepper, Oxf. and St. Thos.; G. G. Phipps, St. Bart.'s; W. H. A. Picton, Oxf. and King's Coll.; T. H. Pierce, Liverp.; E. H. Platts, Leeds; R. M. G. Pole, St. Bart.'s; M. R. Preston, Middlesex; A. W. Probert, Univ. Coll.; L. Rabinovitch, Leeds; J. Rapoport, St. Mary's; J. W. Redgate, Middlesex; J. H. Rees, St. Bart.'s; J. S. Ross, Camb. and St. Thos.; H. H. Samson, London; D. Sanyal, Lucknow and London; S. K. Sen, Patna; T. L. H. Shore, Camb. and London; H. G. Silvester, Univ. Coll.; J. A. H. Smart, King's Coll.; K. Soddy, Univ. Coll.; A. F. Stallard, Camb. and St. Bart.'s; W. J. Stokes, London; Phyllis J. M. Sykes, Univ. Coll.; Dorothy J. Thompson, Camb. and Bristol; B. Thorne Thorne, Camb. and St. Bart.'s; R. M. Thornton and J. B. Tointon, St. Thos.; L. N. Trethowan, Guy's; R. C. H. Tripp, Camb. and St. Thos.; T. H. Tulpule, West London; R. W. D. Turner, Camb. and St. Thos.; W. F. Viret, Leeds; J. T. Waldie, Guy's; J. H. Walters, Camb. and King's Coll.; C. W. Warne, Guy's; A. G. Waters, Cardiff; Elizabeth B. White, Royal Free; E. G. K. Williams, Camb. and St. Bart.'s; T. M. Williams, Oxf. and St. Thos.; W. Wilson, Manch.; I. N. Winer, Middlesex; J. W. Wishart, Manch.; P. L. E. Wood, Camb. and St. Thos.; J. E. Wooding, Camb. and St. Bart.'s; and Betty M. Zeal, Univ. Coll.

International Society of Medical Hydrology

The annual meeting was held at Zurich, Davos, and St. Moritz, from Jan. 28th to Feb. 2nd. Dr. O. Veraguth, professor of physical medicine in the University of Zurich, president for 1934-35, gave an address entitled "Physicothérapie et Physiothérapie," in which he distinguished between physical medicine and nature cures. Of the two discussions, the first was on the negative phase or preliminary exacerbation commonly observed in spa patients, which it is now proposed to describe as a "cure crisis," to avoid confusion with reactions to single baths; the chief speakers were Dr. J. B. Burt (Buxton), Dr. Valette (La Bourboule), Dr. Schober (Germany), and Dr. Reichart (Pistany). At the other the first step was taken in the definition and classification of "peloids," or semi-solid bath media, such as muds, peats, moors, mainly on the proposal of Mr. Judd Lewis, D.Sc. Among the papers read was one by the veteran physiologist, Prof. A. Loewy (Davos) on circulatory changes, and another by Dr. O. Bernhard (St. Moritz). The history of the Swiss health resorts was given by Dr. P. M. Besse (Geneva), with illustrations on the epidiascope. The success of the meeting owed much to the hon. secretary, Dr. Armien Keller (Rheinfelden).

Royal College of Surgeons of England

At a meeting of the council on Feb. 8th, Sir Holburt Waring, the president, reported the appointment of Mr. Victor Bonney as Bradshaw lecturer for the ensuing year. Mr. Bonney was also re-elected the representative of the College on the Central Midwives Board.

Diplomas of membership were granted to the candidates whose names were given in our issue of Feb. 3rd as recipients of the L.R.C.P. (with the exception of H. V. Corbett, J. F. Galloway, and H. V. House), and to William Bullock, Liverp.; H. D. Fairman, London; and J. R. Kingdon, St. Bart.'s.

Diplomas in Public Health were granted jointly with the Royal College of Physicians to the candidates whose names were also given on Feb. 3rd.

The president reported that an election of four Fellows into the Council would take place on Thursday, July 5th, at 11 A.M., in the vacancies occasioned by the retirement of Mr. Ernest W. Hey Groves, Mr. G. Grey Turner, and Mr. Hugh Lett and by the death of Mr. R. P. Rowlands; that notice of the election would be given to the Fellows by advertisement and by circular on March 9th; that March 19th would be the last day for the nomination of candidates; and that a voting paper would be sent on April 3rd to every Fellow of the College whose address was registered at the College.

Royal College of Physicians of Edinburgh

A quarterly meeting of the College was held on Feb. 6th, with Dr. Edwin Bramwell, the president, in the chair. Dr. Ian George Wilson Hill (Aberdeen) and Dr. Sydney Alfred Smith (Edinburgh) were introduced and took their seat as Fellows of the College. Dr. Francis Wm. Murray Cunningham (Hove), Dr. Prem Nath Suri (Lahore), and Dr. Alexander MacAndrew Gillespie (Gold Coast Colony) were elected to the Fellowship.

Royal College of Surgeons of Edinburgh

At a meeting of the College held on Feb. 5th, with Dr. A. H. H. Sinclair, president, in the chair, the following candidates who have passed the requisite examinations were admitted Fellows: Thomas White Carroll, M.B. Melb.; John Laing Mewton, M.B. Liverp.; John Bernard Reid, M.B. St. Andrews; and Basil Williams, M.B. Melb.

Royal College of Surgeons in Ireland

The annual charter day dinner was held on Feb. 10th in the hall of the College, when about 150 Fellows and guests were present. Among those who spoke were the president, Mr. F. C. Crawley, the vice-president, Mr. Seton Pringle, the Lord Mayor of Dublin, Mr. W. Ernest Miles, and Mr. Justice FitzGibbon. Prior to the dinner Mr. Miles was admitted to the honorary fellowship of the College. He was presented to the president and College by Mr. W. Doolin, who spoke of his 30 years of devoted service to the Cancer Hospital in London.

University of Glasgow

Dr. Andrew Hunter, Gardiner professor of physiological chemistry in the University, has been elected dean of the faculty of medicine for 1934.

The Macewen medal in surgery has been awarded to G. Forbes.

The late Sir Donald MacAlister, chancellor of the university, has bequeathed £500 to be added to the Chrystal fund. The university court has also accepted Lady MacAlister's offer of Sir Donald's medals and a number of his books.

University of Manchester

Dr. John Cowan has been appointed part-time lecturer in physiotherapy in the University. At the Manchester Royal Infirmary he is in charge of the massage and electrical department.

Hospital Almoners Association

Miss C. Morris, chairman of this association, presided at the annual dinner which was held at the Hans-crescent Hotel on Feb. 2nd. The guests included: Miss Lloyd Still, matron of St. Thomas's Hospital and president of the International Council of Nurses; Miss Louisa Martindale; and Dr. Ian Grant, medical superintendent of the Royal Infirmary, Glasgow.

Institute of Child Psychology

A luncheon was held by this institute on Feb. 8th under the chairmanship of Prof. Winifred Cullis, at which Dr. Margaret Lowenfeld and Dr. Ethel Dukes, the directors of the institute, described the work which is being done there. Since its inception in 1928 it has served as a centre for research and study. During the past year nearly 600 attendances by children have been recorded and over 1000 hours of individual treatment have been given. New premises, where more rooms are available, have been acquired at 26, Warwick-avenue, London, W.9.

Practical Stage Course

The spring course at the Everyman Theatre, Hampstead, London, N.W.3, is beginning now and will be continued on certain Sunday afternoons till the end of March (Feb. 18th, March 4th, March 11th, March 18th, and March 25th). Every aspect of the theatre is dealt with in this comprehensive course except the art of writing plays; and even this is made good by a series of special lecture classes which will be given by Miss Marion Fawcett. Those who wish to join the course should write to the Little Theatre, Citizen House, Bath, for further particulars.

An East London Nurses' Home

On Friday last Dr. F. Barrie Lambert, chairman of the central public health committee of the London County Council, opened a new nurses' home at the Mile End Hospital, Bancroft-road, E. This four-floored building has 83 bedrooms, fitted with hot and cold water, there is a large dining hall, and space adjoining the building has been reserved for a garden and a tennis court. This is the first nurses' home to be built by the Council since it took over the public health services, but it is intended to erect 15 others at hospitals under its jurisdiction.

Research Scholarships in Hæmatology

The Lady Tata memorial trust was founded and endowed in 1932 by the late Sir Dorabji Tata, of Bombay, to promote the research into diseases of the blood. Part of the income of the trust is reserved for the provision of research scholarships, fellowships, and grants for Indians working either in India or abroad; the rest is distributed among workers of any nationality. Last June four scholarships were awarded, and it is now announced that four further scholarships, each of £400 a year, will be open for award in June, 1934, to men or women of any nationality for research work in the subject of blood diseases, with special reference to leukæmias. Each will be tenable for a year, from Oct. 1st, and renewable up to a normal maximum tenure of three years. The scholarships will ordinarily be awarded on a whole-time basis, but a candidate holding a part-time teaching post may be allowed to retain this. Applications in proper form should reach the secretary, Dr. H. S. Patel, Lady Tata Memorial Trust, Capel House, New Broad-street, London, E.C.2, by April 15th. Applications which are delayed by special circumstances will be accepted up to April 30th.

Hunterian Society

The Hunterian oration of this society will be delivered at the Mansion House at 9 P.M. on Monday, Feb. 26th, by Dr. B. T. Parsons-Smith, physician to out-patients at the National Hospital for Diseases of the Heart. Dr. Parsons-Smith will speak on Cardiac Failure in the Eighteenth Century and its Modern Conception.

The annual dinner was held on Feb. 8th, the chair being taken by Mr. W. E. Tanner, the president. The toast to the memory of John Hunter, the man who had raised surgery to an experimental science, was drunk in silence. The health of the society was proposed by Judge Cecil Whiteley, who commented on the discussion recently held by its members on the value of alcohol to the citizen. If the word value meant financial value, he agreed that alcohol was of enormous financial value to his profession and to the doctor's. Various professions put strikingly different interpretations on the words "drunk" or "under the influence of drink." The evidence of medical men called in to cases of alleged drunkenness in charge of cars completely confused juries who had never heard a case of the kind before. It was strange that persons charged with drunkenness always appeared to suffer from some obscure disease which accounted for all their symptoms. The President, replying, said that the existence of medical societies testified to the health of medicine in the country. The Hunterian Society was mindful of the past, looked to the future, but was ever alert for the present. Prof. John Eyre, proposing the Corporation of the City of London, spoke of the cordial relations between that body and the society. Sir Charles Batho replied, emphasising the good feeling between the corporation and the hospitals. Dr. C. F. Hadfield proposed the Guests and the Kindred Societies, and said that the chief tradition the society perpetuated was that of hospitality. Lord Horder and Mr. P. J. Hannon, M.P., replied.

ROYAL COLLEGE OF SURGEONS

THE HUNTERIAN FESTIVAL

On Tuesday last Sir CUTHBERT WALLACE delivered the Hunterian oration of the Royal College of Surgeons of England, and the president and council subsequently held the Hunterian festival dinner in the library of the College. The company included in addition to the speakers:—

Members of Council.—Mr. Wilfred Trotter, F.R.S. (vice-president), Mr. E. W. Hey Groves, Mr. F. J. Steward, Mr. C. H. Fagge, Mr. W. Sampson Handley, Prof. A. H. Burgess, Mr. Victor Bonney, Mr. Hugh Lett, Mr. Leonard Gamgee, Mr. R. G. Hogarth, Prof. R. E. Kelly, Mr. A. James Walton, Mr. A. E. Webb-Johnson, Mr. G. Gordon-Taylor, Mr. R. C. Elmslie, and Mr. L. R. Braithwaite, with Mr. S. Forrest Cowell (secretary), Mr. W. R. Le Fanu (librarian) and Dr. John Beattie (conservator of the museum).

Guests.—Lord Leverhulme, Lord Dawson of Penn (president of the Royal College of Physicians), Lord Lamington, Lord Rutherford, O.M., Lord Moynihan, Lord Riddell, Lord Stanmore, Lord Horder, Bishop Paget, Sir John Bland-Sutton, Sir Farquhar Buzzard, Sir George Newman, Sir William Bragg, O.M., Sir D'Arcy Power, Prof. Langdon Brown, Mr. V. Warren Low (president of the Royal Society of Medicine), Sir George Blacker (president of the Radium Institute), Dr. J. S. Fairbairn (president of the British College of Obstetricians and Gynæcologists), Mr. Edwin Deller, LL.D. (principal of the University of London), Mr. L. G. Brock (chairman of the Board of Control), Sir Buckston Browne, Prof. G. A. Buckmaster, Mr. R. H. Burne, F.R.S., Mr. E. Rock Carling, Mr. E. B. Dowsett, Sir Patrick Duff, Dr. H. Morley Fletcher, Mr. Claude Frankau, Mr. E. Pearce Gould, Dr. N. G. Horner, Mr. E. C. Hughes, Mr. G. C. Knight, Mr. A. L. Lawrence, Dr. E. Kaye Le Fleming, Mr. T. D. McCown, Prof. J. C. McLennan, F.R.S., Mr. Lionel Norbury, Mr. L. O'Shaughnessy, Mr. C. Max Page, Prof. C. A. Pannett, Mr. C. Tate Regan, F.R.S., Mr. H. H. Rew, Prof. Sidney Russ, Dr. D. Slome, Mr. H. G. Spicer, Mr. R. M. Vick, Mr. Cecil P. G. Wakeley, Maj.-General J. W. West, and Prof. William Wright.

Sir HOLBURT WARING, the president, in proposing the toast "To the Memory of John Hunter," said that since the last Hunterian festival two years ago the most important event at the College had been the building and completion of the surgical research farm at Downe which had been founded and endowed by Sir Buckston Browne with a gift of £100,000. Thanks to the munificence of the Leverhulme trustees, Sir Louis Baron, and the late Lord Melchett, four research scholars had been appointed to work at Downe or at the research laboratories in London, in addition to the College research scholar. In the future, it was hoped, the College would be able to offer all the requisite accommodation and facilities for work on problems relating to surgery and its ancillary science biology. Active steps were also being taken in the prosecution of research on cancer. The Prophit trustees had allocated to the College £10,000 to be spent at their discretion on cancer research, and two cancer studentships of £500 per annum for five years with an additional £200 per

annum to each student to enable visits to be made to other seats of cancer research wherever situated. Also the sum of £5000 was given to the College for the Radium Institute to be used by that body working on cancer research in coöperation with another hospital or institute. The College had subsidised research at the Radium Institute on the treatment of cancer with massive units of radium up to 10 grammes, and research on the treatment of cancer by massive X ray radiation to be carried on by the Radium Institute working in conjunction with the Mount Vernon Hospital. To each of these institutions a cancer research student had been allocated.

After referring to the appointment of Sir Arthur Keith as master at Downe on his resignation of the post of conservator of the museum after 25 years' service, the President announced the approaching retirement of Mr. Burne from the physiological curatorship and the appointment of Dr. John Beattie, associate professor of anatomy at McGill University, Montreal, as conservator of the museum and director of scientific research. The post of pathological curator, left vacant by the death of Mr. C. F. Beadles, had not yet been filled. In conclusion he spoke briefly of the developments of the University of London and urged that the College should coöperate more closely with it in connexion with the medical curriculum, examinations, post-graduate education and the organisation of research.

Prof. G. E. GASK, vice-president, proposed the health of the many guests in a speech which mingled skilful classification with skilful compliment.

Sir AUSTEN CHAMBERLAIN, in his reply, spoke earnestly of the potentialities of the British Post-graduate Medical School, of which he is chairman. Those in charge of medical schools, he said, would be the first to agree that they could not make satisfactory arrangements for the coeducation of graduates and undergraduates. A new school had to be built up, and the task was not made easier by the high standard of those already in existence. An urgent need was to give refresher courses to practitioners, but this was only one of the objects of the new school. He wanted to see it the very home and temple of the British contribution to medical science, and for this it must attract the best men in their branches, whether as members of the staff or as occasional teachers. Quite as important as the teaching was the research it should be carrying on. He believed that if the school was started on the right lines with the right men it would be a magnet drawing the world to British medical science, and he appealed to the College for the goodwill and support which were indispensable for its success.

Sir ARTHUR STANLEY, proposing the health of the Hunterian orator, referred to Sir Cuthbert Wallace's important services in two wars, his outstanding work at St. Thomas's Hospital, and to his present directorship of the Mount Vernon Hospital. No achievement in life, he thought, could be more satisfactory than to have brought fresh lustre to the fame of a great hospital.—Sir CUTHBERT WALLACE, in reply, spoke of the landmarks of the surgical career and the pleasures or pains that they evoke.

After the dinner there were exhibitions in various rooms of the College. One of them included books and papers describing especially investigations on the nervous system which have depended upon discoveries in the field of electricity. Others illustrated work in the museums (Mr. R. H. Burne, Mr. T. W. P. Lawrence, Miss M. L. Tildesley, Mr. C. J. S. Thompson, and Mr. T. D. McCown) and in the research laboratories (Sir Charles Ballance, Mr. L. O'Shaughnessy, Dr. David Slome, Mr. G. C. Knight, and Dr. R. A. Willis).

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

TUESDAY, Feb. 20th.

General Meeting of Fellows at 5.30 P.M. Ballot for election to the Fellowship.

Pathology. 8 P.M. Laboratory Meeting at the National Institute for Medical Research, Hampstead, N.W. Demonstrations: S. R. Douglas: Rabbit Ringworm. W. Levinthal: The Virus of Psittacosis. G. W. Dunkin: The Complement-fixation Test in the Diagnosis of Johne's Disease and Tuberculosis and the Use of a New Antigen. Bruce Balfour-Jones: An Organism Resembling *Erysipelothrix rhusiopathiæ* Associated with Liver Lesions of Mice. P. P. Laidlaw, C. H. Andrewes, and Wilson Smith: Histology of Influenza of Ferrets. U. Friedemann: Symptoms produced in Rabbits by Intrathecal Injection of Extracts of Human Bone-marrow and Spleen. I. A. Galloway and J. R. Perdrau: Histology of Monkeys Intranasally Infected with Louping-ill. I. A. Galloway: Vesicular Stomatitis Virus in the Developing Egg. J. R. Perdrau: The Virus Isolated from the St. Louis Outbreak of Encephalitis. C. H. Andrewes: Infectious Papillomatosis of Rabbits. J. E. Barnard: A Microscopical Demonstration.

THURSDAY.

Urology. 8.30 P.M. Short papers: Mr. Hamilton Bailey: Some Testicular Misconceptions. Mr. F. E. Feilden: Some Observations on Prostatic Carcinoma with Special Reference to Treatment. Mr. Kenneth Heritage: Spontaneous Circumrenal Hæmatoma.

FRIDAY.

Disease in Children. 5 P.M. (Cases at 4.30 P.M.) Cases: Mr. R. A. Broderick: 1. Concealed Cleft Palate. Dr. Eric Pritchard and Dr. Jean Smith: 2. Treatment of Fractures in New-born Babies Without Splints (Cinematograph Film). Dr. J. C. Hawksley (for Dr. Robert Hutchison): 3. Acholuric Family Jaundice in an Infant. Prof. F. S. Langmead: 4–6. Splenomegaly and Hepatic Cirrhosis in Brothers. Dr. R. W. B. Ellis (for Dr. Hugh Thursfield): 7. Hepatomegalic Infantilism in Two Sisters. Mr. P. Wiles and Dr. A. Moncrieff: 9. Amyoplasia Congenita. Dr. W. Sheldon: 10. A Form of Gigantism with Splanchnomegaly. Dr. Eric Pritchard: 11. Klippel Feil's Disease or Web-neck. Dr. J. V. Braithwaite: 12. Congenital Stenosis of the Hepatic Duct. Dr. F. Parkes Weber: 13. Idiopathic Hepatic Cirrhosis with Recurrent Jaundice. Other Cases.

Epidemiology and State Medicine. 8 P.M. Discussion on Vaccination: the Modern View. To be opened by Dr. S. Monckton Copeman, Dr. Mervyn Gordon, and Prof. J. C. G. Ledingham.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.

MONDAY, Feb. 19th.—9 P.M., Dr. C. E. Lakin: Disturbances of the Body Temperature. (First Lettsomian lecture.)

MEDICO-LEGAL SOCIETY.

THURSDAY, Feb. 22nd.—8.30 P.M. (11, Chandos-street, London, W.), Sir Lancelot Sanderson: Law and Order and Medicine in India in the Future.

CHELSEA CLINICAL SOCIETY.

TUESDAY, Feb. 20th.—7.30 P.M. (at the Hotel Rembrandt, Thurloe-place, S.W.), Dinner followed by Discussion on the Mount Everest Expedition, to be opened by Brigadier-General C. G. Bruce.

NORTH-WEST LONDON MEDICAL SOCIETY.

TUESDAY, Feb. 20th.—9.30 P.M. (at the Regal Rooms, Finchley-road, N.W.), Mr. R. Trevor Jones: Surgical Diathermy.

ROYAL MEDICO-PSYCHOLOGICAL ASSOCIATION.

THURSDAY, Feb. 22nd.—2.30 P.M. (at 11, Chandos-street, Cavendish-square, W.), General Meeting and Paper by Dr. T. Lindsay on Mental Deficiency at Caterham.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS, Lincoln's Inn, W.C.

MONDAY, Feb. 19th.—5 P.M., Mr. Denis Browne: Talipes Equino-Varus.

WEDNESDAY.—5 P.M., Mr. C. Bowdler Henry: Aberrant Third Molars and Their Menace.

FRIDAY.—5 P.M., Sir Thomas Dunhill: Diaphragmatic Hernia (Non-traumatic). (Arris and Gale Lectures.)

UNIVERSITY COLLEGE HOSPITAL MEDICAL SCHOOL, University-street, Gower-street, W.C.

FRIDAY, Feb. 23rd.—5 P.M., Mr. A. S. Parkes, D.Sc.: The Coördination of the Reproductive Processes. (Sidney Ringer lecture.)

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.
MONDAY, Feb. 19th, to SATURDAY, Feb. 24th.—ST. JOHN'S HOSPITAL, Leicester-square, W.C. Course in Dermatology. Afternoons and evenings: lectures and demonstrations. Practical Pathology arranged if desired. (Open to non-Members.)—MEDICAL SOCIETY OF LONDON, Chandos-street, W. Lecture-demonstration on Diarrhœa, by Dr. A. E. Clark-Kennedy, on Tues., at 2.30 P.M. to 4 P.M.—ROYAL FREE HOSPITAL, Gray's Inn-road, W.C. Demonstration in Antenatal Diagnosis and Treatment. Frid., at 5 P.M., by Dame Louise McIlroy.—PRINCE OF WALES'S HOSPITAL, Tottenham, N.15. Course in Medicine, Surgery, and the Specialties. All day.—PANEL OF TEACHERS: Individual clinics in various branches of medicine and surgery are available daily by arrangement with the Fellowship of Medicine. Courses of instruction, clinics, demonstrations, &c., arranged by the Fellowship of Medicine are open only to Members and Associates unless otherwise stated.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL, Denmark-hill, S.E.
THURSDAY, Feb. 22nd.—4.30 P.M., Dr. J. C. Bridge: Prevention of Occupational Disease. 9 P.M., Dr. M. Sydney Thomson: The Pyogenic Dermatoses.

NATIONAL HOSPITAL, Queen-square, W.C.
MONDAY, Feb. 19th.—2 P.M., Dr. Riddoch: Out-patient Clinic. 3.30 P.M., Dr. Martin: Myasthenia and Disorders of the Thyroid Gland.
TUESDAY.—2 P.M., Dr. Walshe: Out-patient Clinic. 3.30 P.M., Dr. Grainger Stewart: Polyneuritis (1).
WEDNESDAY.—2 P.M., Dr. Martin: Out-patient Clinic. 3.30 P.M., Dr. James Collier: Clinical Demonstration.
THURSDAY.—2 P.M., Dr. Kinnier Wilson: Out-patient Clinic. 3.30 P.M., Dr. Kinnier Wilson: Infective Diseases of the Nervous System (5).
FRIDAY.—2 P.M., Dr. Adie: Out-patient Clinic. 3.30 P.M., Mr. Elmquist: Demonstration of Re-educative Exercises in Exercise-room (1).

ROYAL NORTHERN HOSPITAL, Holloway-road, N.
TUESDAY, Feb. 20th.—3.15 P.M., Mr. W. B. Gabriel: Ano-Rectal Tuberculosis.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.
FRIDAY, Feb. 23rd.—4 P.M., Mr. C. Gill-Carey: Foreign Bodies in the Food and Air-passages.

HAMPSTEAD GENERAL AND NORTH-WEST LONDON HOSPITAL.
WEDNESDAY, Feb. 21st.—4 P.M., Mr. H. Lawson Whale: Modern Indication for Mastoid Operations.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION. St. James' Hospital, Onslow-road, Balham, S.W.
WEDNESDAY, Feb. 21st.—4 P.M., Dr. Maurice Shaw: Medical Facts and Fallacies.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.
TUESDAY, Feb. 20th.—5 P.M., Dr. H. G. Burford: Cutaneous Affections Due to Cold.
THURSDAY.—5 P.M., Dr. W. K. Sibley: Electrotherapeutics.

NATIONAL COUNCIL FOR MENTAL HYGIENE.
WEDNESDAY, Feb. 21st.—5 P.M. (at 11, Chandos-street, W.), Dr. Ian Suttie: The Rôle of the Nurse in Child Development.

HOSPITAL FOR EPILEPSY AND PARALYSIS, Maida Vale, W.
THURSDAY, Feb. 22nd.—3 P.M., Dr. D. McAlpine: Clinical Demonstration.

MANCHESTER ROYAL INFIRMARY.
TUESDAY, Feb. 20th.—4.15 P.M., Dr. P. R. Mumford: Differential Diagnosis of Trade Dermatitis (Illustrated).
FRIDAY.—4.15 P.M., Dr. Crighton Bramwell: Demonstration of Cardiac Cases.

ST. MARY'S HOSPITALS, Manchester.
FRIDAY, Feb. 23rd.—4.15 P.M. (at the Whitworth-street West Hospital), Dr. Lapage: Common Digestive Disorders of Children.

SALFORD ROYAL HOSPITAL.
FRIDAY, Feb. 23rd.—4.15 P.M., Dr. Hugh T. Ashby: Demonstration of Cases of Diseases in Children.

LEEDS GENERAL INFIRMARY (Post-graduate Clinic).
TUESDAY, Feb. 20th.—4 P.M., Mr. Daw: Demonstration of Orthopædic Cases.

GLASGOW POST-GRADUATE LECTURES.
TUESDAY, Feb. 20th.—3.30 P.M. (in the Faculty Hall, Vincent-street), Dr. T. Archibald: Present Practice in the Treatment of Scarlet Fever and Diphtheria.
WEDNESDAY.—4.15 P.M. (at the Ear, Nose, and Throat Hospital), Dr. R. J. Watson: Cases.

Vacancies

For further information refer to the advertisement columns

All Saints Hospital, Austral-street, West-square, S.E.—Hon. Dentist.
All Saints Hospital for Genito-urinary Diseases, West-square, S.E.—Res. H.S. £100–£150.
Bangor, Carnarvonshire and Anglesey Infirmary.—Jun. H.S. At rate of £100.
Birkenhead General Hospital.—Sen. H.S. At rate of £150. Also Second H.S., H.P., and Cas. O. Each at rate of £100.
Birmingham Ear and Throat Hospital.—Third H.S. At rate of £150.
Birmingham, Little Bromwich Hospital for Infectious Diseases.—Two Jun. Asst. M.O.'s. Each £300.
Birmingham and Midland Eye Hospital, Church-street.—Asst Surgeon.
Birmingham, Queen's Hospital.—Bacteriologist. £500.
Birmingham, Selly Oak Hospital.—Cas. O. At rate of £200.
Carlisle, Cumberland Infirmary.—H.P. Second H.S. Also H.S. to Spec. Depts. Each at rate of £155.
Charing Cross Hospital, W.C.—Hon. Ophth. S., Hon. Clin. Asst. to X ray and Electro-therapeutic Dept. Also Surg. Reg. £150. Obstet. and Gyn. Reg. and Registrar for Ear, Nose, and Throat Dept. Each £100.
City of London Hospital for Diseases of the Heart and Lungs Victoria Park, E.—Asst. Tuber. O. £600.
Colchester, Essex County Hospital.—Asst. H.S. £120.
Denbigh, North Wales Sanatorium, Llanrwfan.—Jun. Asst. Res. M.O. £250.
Dreadnought Hospital, Greenwich, S.E.—H.P. and H.S. Each at rate of £110.
Edinburgh Municipal Hospitals.—H.P.'s and H.S.'s. Each at rate of £100. Also Jun. H.S. £50.
Evelina Hospital for Sick Children, Southwark, S.E.—Physician to Skin Dept. 50 gns.
General Lying-in Hospital, York-road, Lambeth, S.E.—Jun. Res. M.O. and Anæsthetist. At rate of £100.
General Post Office, Headquarters Medical Dept.—Asst. M.O. £505.
Great Yarmouth General Hospital.—H.S. £140.
Grimsby County Borough.—Clin. Tuber. O. and Chief Asst. M.O.H. £750.
Hospital for Sick Children, Great Ormond-street, W.C.—H.P. and H.S. Each at rate of £100.
Hospital for Tropical Diseases, Gordon-street, W.C.—H.P. At rate of £120.
Hospital for Women, Soho-square, W.—Hon. Consulting Surgeon.
Hull Royal Infirmary.—H.P. to Sutton Branch Hospital. At rate of £160. Also Cas. O. At rate of £150.
Ilford, King George Hospital.—H.S. At rate of £100.
Jerusalem, St. John Ophthalmic Hospital.—Two Jun. Members.
Kensington Royal Borough.—Asst. M.O. £500.
L.C.C. Infectious Hospitals Service.—Asst. M.O.'s. Each £350. Also *General Hospitals Service.* Asst. M.O. £250.
Liverpool, County Mental Hospital, Rainhill.—Asst. M.O. £500.
Liverpool and District Hospital for Diseases of the Heart.—H.P. At rate of £100.
Liverpool Stanley Hospital.—Two H.S.'s. Each £100.
Liverpool, Walton Hospital and Mill-road Infirmary.—Res. M.O.'s. Each £200.
Liverpool, Women's Hospital, Catharine Hospital.—H.S. At rate of £100.
London Jewish Hospital, Stepney Green, E.—Hon. Asst. Gynæcologist.
Manchester, Christie Cancer Hospital and Holt Radium Institute. Surg. O. £150.
Manchester Royal Children's Hospital.—Two Asst. M.O.'s. Each at rate of £150.
Manchester and Salford Hospital for Skin Diseases.—Asst. M.O. £110.
Miller General Hospital, Greenwich-road, S.E.—H.P. and H.S. Each at rate of £100.
Newark General Hospital.—Res. H.S. £175.
Paddington Green Children's Hospital, W.—Hon. Radiologist. Also Hon. Asst. S. to Ear, Nose, and Throat Dept.
Preston and County of Lancaster Royal Infirmary.—Cas. O. £150.
Preston, County Mental Hospital, Whittingham.—Jun. Asst. M.O. £500.
Preston, Sharoe Green Hospital.—Jun. Asst. Res. M.O. At rate of £100.
Prince of Wales's General Hospital, N.—Jun. H.P. and Two Jun. H.S.'s. Each at rate of £90. Also Hon. Med. Reg. Also Hon. Surg. Reg. Each £100.
Royal Eye Hospital, St. George's-circus, Southwark, S.E.—H.S. and Asst. H.S. At rate of £150 and £100 respectively.
Royal National Orthopædic Hospital, 61, Portland-street, W.—H.S. for Brockley-hill, Stanmore. At rate of £150.
Royal Northern Hospital, Holloway, N.—Gynæcologist and Obstetric Surgeon.
Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—Hon. M.O. for charge of Clinic.
St. John's Hospital for Diseases of the Skin, 49, Leicester-square, W.C.—Out-patient and In-patient Med. Regs. Each £50.
St. Leonards-on-Sea, Buchanan Hospital.—Sen. and Jun. H.S. At rate of £175 and £125 respectively.
St. Mary's Hospital, W.—Third Asst. Pathologist. £250.
Sheffield Royal Infirmary.—Jun. Asst. Pathologist. £300.
Shoreham-by-Sea, Southlands Hospital.—Asst. M.O. £350.
South London Hospital for Women, Clapham Common, S.W.—H.S. At rate of £100.
Swansea General and Eye Hospital.—H.S. At rate of £150.
Tancred's Studentships. Each £100.
Tunbridge Wells Royal Borough.—Asst. M.O.H. and Asst. School M.O. £500.
University College Hospital, Gower-street, W.C.—Asst. P. Also Surg. Reg. £250.
West London Hospital, Hammersmith-road, W.—H.P. and H.S. Also H.S. to Throat, Nose, and Ear Dept. Each at rate of £100.
Western Ophthalmic Hospital, 155, Marylebone-road, N.W.—Jun. Res. H.S. At rate of £100.
Worcester Royal Infirmary.—Jun. H.S. £120.
Wrexham and East Denbighshire War Memorial Hospital.—Res. H.S. At rate of £150.
The Chief Inspector of Factories announces vacant appointments for Certifying Factory Surgeons at Bethnal Green, London; Devizes, Wiltshire; and Horsmonden, Kent.

NOTES, COMMENTS, AND ABSTRACTS

DRIVING IN FOG

A GLASS produced with the object of combining those optical properties which are most appropriate to the purpose of driving in fog has recently been put on the market by London Motor Accessories Co., 16, Charing Cross-road, W.C., under the name of Nebulite. The manufacturers have had as their ideal almost complete transparency to light of wave-length covering the range which penetrates fog, and complete opacity to light of wave-length which causes the back glare and to the shorter wave-lengths up to the limit of vision. It is now recognised that in fog the back glare is largely due to the scattering of the blue and violet components of white light, and since this glare is one of the hindrances to seeing what is on the road, many orange and amber glasses and discs are already in use. We are informed that nebulite has been compared spectroscopically with various amber glasses taken from fog lamps of various makes and with orange and yellow celluloid discs, and has been found superior to any of these in transmitting light only of desired wave-lengths. Different glasses which looked alike and were not markedly different from nebulite in colour showed great variations in spectograms, whereas nebulite is said to have a precise and constant absorption limit.

This glass certainly merits trial, though too much must not be expected of a device designed for conditions in which every other factor is so variable. A motorist driving in a fog has to consider two unknowns: (1) his own driving lights, and (2) the intensity of the fog, which can vary widely even within short distances. The quality of the light sent out by the lamps is certainly important; modern car lamps are usually overrun with the result that the violet and blue content is unduly increased. Possibly the best contrivance, if it were practicable, would be a resistance in series with the lamps, so that when fog appeared resistance could be increased with a corresponding reduction of temperature of the filaments. In this way, using ordinary white glass, the red and orange output would be little altered, and the violet and blue could be reduced almost to zero if desired. Failing this, any detachable orange medium of transmission is of course useful, even a simple layer of tissue paper. The principle in fog must always be to reduce lighting to the absolute minimum; the effect of glare, scattering or reflection from suspended water particles is then small. Another device which leaves headlights with white glass available for ordinary use is a small spotlight, not very powerful and with a very narrow beam. This is directed to the near side of the road a few feet in front of the car. The beam is kept out of the direct line of sight as far as possible, and it throws back very little scattered light. The use of nebulite on such a spotlight might increase its value.

CAMPS FOR THE UNEMPLOYED

Grith Fyrd has started a second camp for unemployed men at Ambergate, about 12 miles north of Derby. It will be run on the same lines as the camp at Fordingbridge (THE LANCET, 1933, ii., 623), with the intention that the men shall meet most of their own basic requirements. At present the site is being cleared and levelled and the first shelters erected; but when land has been brought into cultivation and livestock obtained it should be self-supporting. The central situation of the camp should make it available to men drawn from a wide area. The organising secretary of the organisation is Mr. G. W. Keeling, Toynbee Hall, London, E.1.

SPONDYLOLISTHESIS

WRITING on the radiographic appearances in spondylolisthesis, Dr. G. A. G. Mitchell (Brit. Jour. Radiol., 1933, vii., 513) lays stress once more on the fact that the commonest predisposing cause is a congenital defect of the neural arch in the interarticular space. The condition is occasionally unilateral, but much more often bilateral. He quotes several authorities who have found such defects in as many as 6 per cent. of spinal columns; furthermore, the condition is seen as often in males as in females. He insists, of course, that the only positive method of diagnosis is a good lateral X ray picture, but where this is not obtainable a fairly accurate guess can be made by attending to certain details in the anterior view. Neugebauer showed years ago that in the normal person the bitrochanteric length is greater than the bicristal, and that lines joining these two points would if projected converge cranialwards, whereas in spondylolisthesis the opposite applies, and the projected lines would converge caudalwards—i.e., towards the feet. Also, Turner and Tchirkin draw attention to the fact that the forward and downward movement of the vertebra overlying the dislocated last lumbar one causes an upward tilt of its lamina and spinous process, which appears in the radiogram as an inverted Y. Mitchell thinks that if attention is confined to the shadow made by the body of the fifth lumbar vertebra one is liable to confuse spondylolisthesis with what Whitman called a prespondylolisthetic condition, which is an horizontal sacrum, with very marked angulation of the lumbosacral angle. In the latter state, however, the transverse processes of the fifth lumbar vertebra are not likely to stand out as clearly as in a true spondylolisthesis.

This is a useful little paper; it is well illustrated, and the bibliography has been carefully compiled.

GOSPEL STORIES

STORIES from the Bible adjusted to the understanding of children must be in competition with the familiar text, and although this text is in detail largely incomprehensible to very little children, it has associations which make the task of the adjuster a delicate one. Religious parents are wont to explain the text, do not find it always easy to make coherent narratives out of the episodes, and for the most part fail to supply an explanatory background in keeping with the civilisation of 2000 years ago. Mrs. Edwards, in a slim volume,[1] comes skilfully and piously to the assistance of these parents with a life of Jesus, extracted from the Gospel chapters and written with much simplicity. Those to whose ears the words of scripture are permanently present will find nothing in the transcript to offend, and many may see for the first time that an infantile version makes the meaning of many of the stories clear to the infant mind when the authorised records must fail to do so. Mrs. Edwards is the wife of the secretary of the Royal Society of Medicine.

NEW PREPARATIONS

DEKRYSIL.—This preparation, 4:6-dinitro-o-cresol, emanates from the Crookes Laboratories (British Colloids Ltd.), Gorst-road, Park Royal, London, N.W., and was described as a stimulator of metabolism in our columns recently (THE LANCET, 1933, ii., 352) by Prof. Dodds and Sir William Pope. Two further publications (1933, ii., 1137, 1197) gave a résumé of cases treated, with the corresponding charts, and described also toxic symptoms which might arise if the metabolic rate was too rapidly increased. The result of pharmacological experiments has been to show that in dekrysil we have a valuable aid in the treatment of obesity, but it is clear that its administration must be strictly under medical supervision, for potency of the drug is obvious. It is put upon the market in capsule form, the daily dose of one capsule being mentioned, but the manufacturers, who address the medical profession only, send out a useful pamphlet explanatory of the need for the

[1] Stories about Jesus for Very Little Children. By Elizabeth Edwards. London: John Bale, Sons and Danielsson, Ltd. 1933. Pp. 74. 2s. 6d.

careful clinical examination of the patient, and advising practitioners that the dosage suggested should not be exceeded. It is clear that the effect of the exhibition of dekrysil should be studied on the patient, as with many subjects the dose of one capsule per day may be sufficient to cause a loss of weight of half a pound a week. Self-dosage may be therefore very dangerous.

BISMURUNG is an ointment prepared from oxychloride of bismuth in colloid form; it is put on the market by The Blythswood Chemical Co., Ltd., 213, West Campbell-street, Glasgow, C.2. The value of oxychloride of bismuth in cases of lupus erythematosus is well recognised and reference may be made to two articles in THE LANCET in this connexion (R. M. B. MacKenna, THE LANCET, Jan. 25th, 1930, p. 178, and Jan. 17th, 1931, p. 127). The proprietors are now able to report an extension of the use of the preparation for, as might have been expected, its antiseptic and penetrative properties have proved valuable in various inflammatory conditions of the skin, where itching was a prominent symptom.

NURSING HOMES, 1934

THE fourth edition of this little directory (London: Benn Brothers, Ltd. 3*s.* 6*d.*) has been revised and amplified; to the very complete list of registered nursing establishments, general and special, has been added a section for sanatoriums. The only fault which can be found with the volume is inherent in its very success, for reference is impeded by the numerous and attractive advertisements. It would greatly help if the tiresome reiteration on every page of the running head-line Nursing Homes were replaced by sectional headings indicating exactly what is to be found on the page. There is a tendency too to over-elaboration in the topographical distribution. No fault can be found with the English counties (except that Dorsetshire and Devonshire are a syllable too long), but nothing would be lost by replacing the other county names by Wales or Scotland respectively. There are many southern-bred folk to whom Glasgow is lost under Lanarkshire. Some use might be made of coloured paper, and the page numbering might be much bolder. These suggestions are in response to the publisher's request for coöperation with a view to enhancing the usefulness of a useful book.

THE SENIOR COMMON ROOM AT U.C.H. MEDICAL SCHOOL

Sir Buckston Browne has sent us a description of the pictures and furniture presented by him to embellish the common room for the senior staff at University College Hospital medical school. This room, which was finished and formally opened in July last, was designed by Mr. C. Ripley, of Messrs. Waterhouse and Ripley, with the assistance of Prof. R. Schwabe, of the Slade School. The paintings include an interesting copy of Titian's Venus arising from the sea and wringing the water from her golden hair, and one of London street children exhibited by Mr. Edward King at the Royal Academy in 1905. There are six bronze figures of animals by Pierre Jules Mêne, one of them a fine example of the Barbary stallion; also replicas of the Spinario in the Roman capitol and the Borghese Gladiator in the Louvre. A long-cased Chippendale grandfather clock with an enamelled dial by James Tregent is believed to be unique. The room is an ideal one to house these handsome gifts.

THE WESTMINSTER MORTUARY

IN a recent notice of the new Battersea public mortuary (THE LANCET, 1933, ii., 1188) mention was made of the refrigerating chamber of Kelvinator type at Westminster. This mortuary has recently been remodelled at a cost of £1500 at the instigation of Dr. Andrew J. Shinnie, medical officer of health for the city of Westminster. As appears from an account in the *Municipal Journal* for Jan. 5th, the cold chamber is arranged to take nine bodies, the mechanism being so arranged that extracting fans are set in motion as soon as the doors are closed. In one section of the chamber a much lower temperature can be produced. Four post-mortem examinations can proceed at the same time, and in this room both heating and ventilation are electrically controlled. A small room adjoining has been fitted up as a pathological laboratory. Westminster has joined the group of enlightened public authorities who have a model mortuary.

THE SERVICES

ARMY MEDICAL SERVICES

THE War Office announces that Major-General J. A. Hartigan, C.B., C.M.G., D.S.O., Honorary Physician to the King, at present Deputy Director of Medical Services, Aldershot Command, has been appointed Director-General, Army Medical Services, with effect from March 1st, in succession to Lieut.-General Sir Harold B. Fawcus, K.C.B., C.M.G., D.S.O., Honorary Physician to the King, who is retiring at his own request.

ROYAL ARMY MEDICAL CORPS

The undermentioned are restd. to the estabt.: Lts. on prob. P. H. Peacock, G. L. McLeod, and M. S. W. Bisdee.

ARMY RESERVE OF OFFICERS

Capt. H. E. S. Stiven resigns his commn. and retains the rank of Capt.

TERRITORIAL ARMY

Capt. D. R. W. Burbury, R.A.M.C., to be Divl. Adjt., 47th (2nd Lond.) Div. and Sch. of Instn., vice Capt. W. A. D. Drummond, R.A.M.C., vacated.

TERRITORIAL ARMY RESERVE OF OFFICERS

Capt. J. Steedman, having attained the age limit, retires and retains his rank, with permission to wear the prescribed uniform.

Appointments

BUCHANAN, J. A., has been appointed Medical Officer for the Kirkintilloch Parish Council.
HENDERSON, S. J., M.B., Ch.B. Glasg., Visiting Medical Officer, Lennox Hospital, Kirkintilloch.
STEPHENS, T. H., M.B., Ch.B. Edin., Medical Officer of Health, Merthyr Corporation.
WILLIAMSON, A. B., M.D., Ch.B. Edin., D.P.H., Medical Officer of Health, Plymouth.

Births, Marriages, and Deaths

BIRTHS

HORSFALL.—On Feb. 6th, at Shempston, Cheam, the wife of Dr. T. M. M. Horsfall, of a son.
STRONACH.—On Feb. 2nd, at Nottingham, the wife of I. D. Stronach, F.R.C.S. Ed., of a daughter.

MARRIAGES

HOLMAN—DUNHILL.—On Feb. 10th, at All Souls' Church, Hampstead, Frank Geoffrey Holman, M.R.C.S. Eng., L.R.C.P. Lond., to Mary, only daughter of Mr. and Mrs. Alfred Dunhill, of Pynnacles Lodge, Stanmore, Middlesex.

DEATHS

BATE.—On Feb. 5th at a London nursing home, after a short illness, John Bate, M.R.C.S., of Clapton Common, N.E.
CORE.—On Feb. 8th, at Greystoke, West Didsbury, Manchester, Donald Elms Core, M.D., Ch.B., F.R.C.P. Lond.
DUNN.—On Feb. 7th, suddenly, at Tiverton, Devon, Spencer Graeme Dunn, F.R.C.S., B.Sc., of Adamson-road, N.W.
MACKENZIE.—On Saturday, Feb. 10th, at sea on S.S. *Duchess of Richmond*, Colin Mackenzie, O.B.E., M.A., F.R.C.S., of Mornington Villas, Bradford.
MARTIN.—On Feb. 4th, after a short illness, John Birch Martin, M.R.C.S., L.R.C.P., of Cedar-road, Chelmsford.
MERCER.—On Feb. 8th, at Monken Hadley, Walter Mercer, M.B., C.M., aged 81.
PARK.—On Sunday, Feb. 11th, at Staffa, Selsey, Sussex, William Charles Cunningham Park, M.R.C.S. Eng., L.R.C.P. Lond., aged 66.
RYALL.—On Feb. 11th, suddenly, at Harley-street, W., Edward Canny Ryall, F.R.C.S.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.